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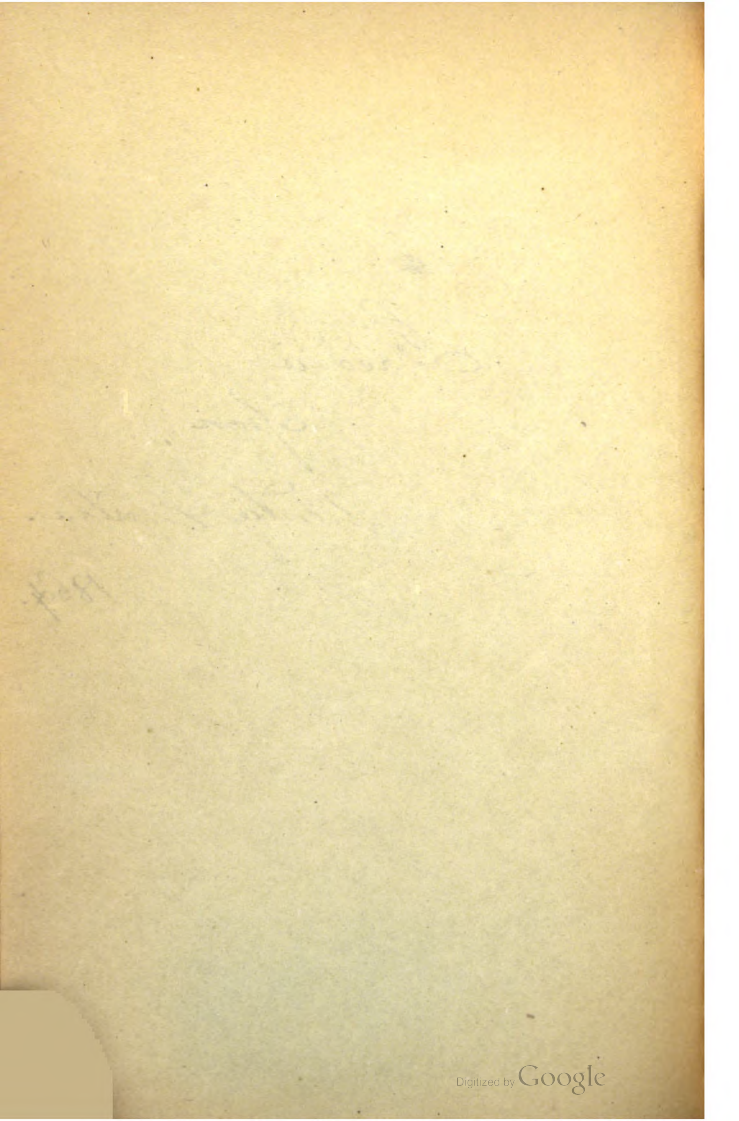
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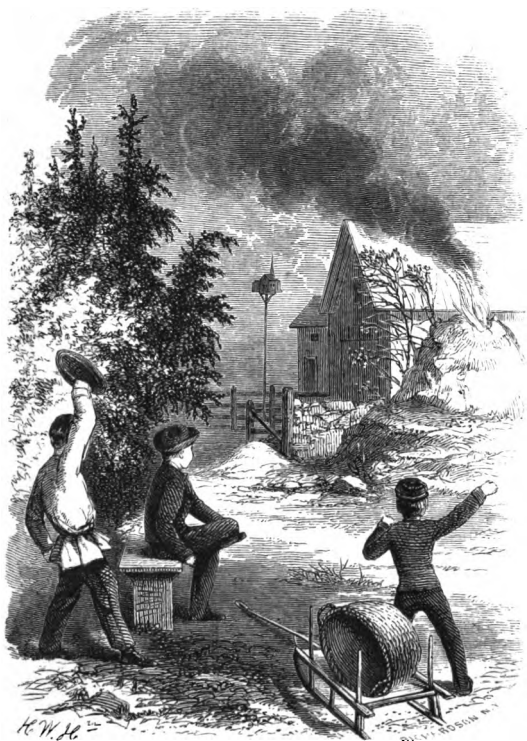
Freddie

of son,

Auntie Martha.

1864.





POPOCATAPETL. Frontispiece.

2
JOHN GAY; OR, WORK FOR BOYS.

BY JACOB ABBOTT.

IN FOUR VOLUMES.

ILLUSTRATED BY H. W. HERRICK.

WORK FOR SPRING.



NEW YORK :
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JOHN GAY'S WORK IN SPRING.

CHAPTER I.

EBENEZER.

AFTER the days began to grow warm and pleasant in the spring, the snow was still deep upon the ground in the part of the country where John and Benny lived. The snow was very hard, however, having become indurated by repeated thawings and freezings, so that now the boys could walk upon the surface of it, over the fields and everywhere, and slide upon their sleds wherever they came to a hill, or to any piece of descending ground.

The boys called walking on this hardened snow walking on *the crust*, but properly speaking there was no crust, that is, there was no special hardening of the snow upon the surface. It was hardened throughout, from top to bottom, even where the snow was several feet in depth.

One morning John and Benny, with their cousin Mary, who was a girl of about John's age, immediately after breakfast, and before the sun was warm enough to melt the snow, set off to make an excursion together.

John and Benny took their sleds. Mary proposed to take Benny's black kitten Mungo with her, as if the kitten had been a little dog.

"But she won't go with you," said Benny. "I can never make her follow me away from the house anywhere. She will follow me about *in* the house, wherever I go, but she won't go away with me."

"Ah! but I will carry her in my arms," said Mary, "until the house is out of sight, and then she will go the rest of the way, I am sure."

So Mary took Mungo in her arms, and the party set off together. They went through the garden, and at the back of the garden they stepped over the top of a small gate which led into a field. The snow came up so near to the top of the gate that it was quite easy stepping over it.

The kitten went along very peaceably thus far, but here, finding everything look

strange about her, she began to feel frightened, and she struggled to get away. Mary held her for a few moments, but fearing at last that she might get scratched, she let her go, and Mungo, bounding over the gate, ran back as fast as she could through the garden toward the house again. Her glossy blackness contrasted strongly, as she ran, with the brilliant whiteness of the snow. Mary looked after her a moment, and then said,—

“Never mind. Let her go. It is of no use to try to make a kitten do for a dog.”

So they went on until at length they came to a long descent, and Benny proposed to have a slide. So Benny seated himself at once upon his sled, and John, whose sled was pretty long, took Mary upon it before him; and in this way they went down the long hill to the bottom of it, Benny’s sled going before and John’s following behind.

John’s sled being larger than Benny’s, and having a heavier load, and the steel runners of it moreover having become highly polished by wear, would go down such a descent faster than Benny’s; but John

waited to let Benny go first. He knew very well that little boys, when they are going anywhere with bigger ones, always feel anxious and uneasy when they are behind, fearing that they may not be able to keep up. So John in all his excursions with Benny generally managed to let Benny be in advance. He knew that Benny liked this better, and he accordingly took care whenever he could to give him this advantage.

He considered this in fact as a part of his duty under the agreement which he had made with his mother, as related in the first volume of this series, by which he was appointed his brother's special friend and protector, and was to receive as his salary, so long as he performed faithfully the duties of his office, the sum of twenty-five cents per week, to buy tools with.

John had already received his salary for two or three months, and had bought a great many tools, — chiefly of such kinds as could be used without a bench. But now that the spring was coming on, and the weather was growing so warm and pleasant that he could work in some of the

out-buildings, around his mother's house, without a fire, he was quite interested in the plan of having a bench, and a set of bench-tools. For this purpose he wished to gain all the money that he could; and so for this reason, if for no other, he was desirous of being faithful in the performance of his duties, so as to continue to earn and receive his salary.

At the foot of the hill the sliders came to a small brook. The water of this brook had been increased by the thawings of the snow which had taken place during the warm part of the day before, so that it had stood in pools along the bed of the brook, its flow being impeded by the ice and snow which still remained unmelted in many places. In the cool of the evening and in the early part of the night these pools had been frozen over, and then during the remainder of the night the water had been drawn off from below by slowly flowing away through such interstices and openings as it could find. In this way the ice had been left unsupported, and when Benny's sled came down upon it as he reached the foot of the hill, it produced a hollow

and rumbling sound which alarmed him a little. He was afraid that he was going to break through.

His sled, however, glided swiftly across the ice ; and as soon as it reached the snow on the other side he jumped off from it, as quick as he could, and turned round and shouted out to John to stop his sled or turn it off.

"Turn off!" cried he. "Turn off! or you'll break through the ice and get drowned."

John turned his sled down along the bank of the brook, so that finally it stopped without going upon the ice at all. After he and Mary had got off from it, however, they walked out cautiously upon the hollow ice. It settled several times under their weight, as they walked over it, with loud crackings, but did not break through.

"You are a very good pioneer, Benny," said John.

"What is a pioneer?" asked Benny.

"Pioneers," replied John, "are men that go before to prepare the way and give warning of danger. I believe I will have you for my pioneer."

"Well," said Benny, "if the pioneers always go before, I should like to be one. I never like to go behind."

Just then the boys heard a sound as of a man driving oxen.

"Hark!" said John. "I wonder if that is not Ebenezer."

"Who is Ebenezer?" asked Mary.

"He is a farmer's boy that lives about here," said John.

"He is not a boy — he is a man," said Benny.

"Well, a man then," said John. "At any rate he is a pretty big boy. I verily believe that he is going into the woods with his team. Let's go and see."

There was a clump of evergreens growing out from the snow in the direction of the voice, which concealed the person whose voice the children heard from view.

"Run on, Benny," said John, "and we will see who it is."

So Benny ran on with his sled, and John and Mary followed. They found that it was really Ebenezer. He was going slowly along the road with a sled drawn by a team of oxen.

"Ebenezer," said John, "may we ride?"

"Yes," said Ebenezer, "if you will jump on behind and not before."

So the children stepped over the stone wall, or rather over that small portion of it which appeared above the snow, and ran on after the sled. They soon all got on safely, and sat down upon the end of it to rest, their feet hanging down, and their sleds following along after them in the road, as they held the cords which drew them in their hands.

Presently Benny gave his cord to John to hold, and then got up from his seat and walked along to the front of the sled, steadying himself as he went by the stakes at the sides.

Ebenezer was near the front of the sled, where he could see and guide his oxen. He was seated upon a chain which passed across the sled from side to side, between two of the stakes. The chain was double where it passed across, and Ebenezer had separated the two parts a little, so as to widen his seat, but still it did not look very comfortable.

There was a heavy beetle and several

iron wedges lying upon the floor of the sled, which was formed of boards, and near them was a bundle of hay tied round with a withe. In the side of the sled, in a socket, formed for the purpose in a piece of wood nailed upon the outside of one of the long bars which formed the frame, was an axe. On the other side of the sled was a shovel, secured in the same way.

“Ebenezer,” said Benny, “where are you going?”

“Into the woods,” said Ebenezer.

“What for?” asked Benny.

“To get a load of wood,” said Ebenezer.

“Wood to burn?” asked Benny.

“Yes,” said Ebenezer.

Ebenezer was very patient in answering the questions which children asked him, and one reason why it was easy for him to be so, was that he made very short work of it, never attempting to do anything more than to give a simple answer in respect to the one simple point to which the question referred,—leaving the child, if he wished for farther information, to ask for it by new questions. Many people make

it unnecessarily fatiguing and troublesome to themselves to answer the questions which children ask them, on account of their attempting too much, and giving too long and labored answers, which after all do not satisfy the children so well as such short and simple ones as Ebenezer gave. For they cannot well understand but one thing at a time, and when they have received information on one point, they generally make a short pause to give their minds an opportunity to receive fully the first idea before they are ready for a second. Their minds are in this respect like a very long telegraphic wire, which requires a sensible time for an electrical pulsation to pass through it. So that if the operator sends the pulsations on so rapidly, that one follows upon another before the first is well out of the way, he mixes them together in confusion, and spoils his whole message.

"Ebenezer," said Benny, "why did not you take your horses, instead of the oxen, to come into the woods?"

"Because oxen are steadier in the snow," said Ebenezer.

"But, Ebenezer," said Benny, after a

moment's pause, "our horse goes along very steady on the snow when we go to take a sleigh-ride."

"That is because there is a good road," said Ebenezer.

"But sometimes he goes steady when there is not a good road."

"That is because the loose snow is very thin and light," said Ebenezer.

"Oh!" said Benny, in a tone of satisfaction. "Is not the snow thin and light in the woods?"

"No," said Ebenezer; "it is very deep and heavy."

"But it is very *hard*," said Benny. "We have been walking on it and sliding on it all the morning."

"It will get soft by and by," said Ebenezer, "when the sun grows warm."

"Ebenezer," said Benny, beginning again after a pause, "what are you carrying this bundle of hay out into the woods for?"

"To give to my cattle," said Ebenezer.

"Are you going to stop and let them have time to eat it?" said Benny.

"They will have time to eat it while I am loading the sled," said Ebenezer.

"Oh!" said Benny.

"Ebenezer," said Benny again, after another pause, "what do you have an axe for on your sled?"

"To cut wood with when I am in the woods," said Ebenezer.

"And what do you have the beetle and wedges for?"

"To split the big logs," said Ebenezer

"Oh!" said Benny.

"I'll help you split the logs," he added, after a moment's pause. "I can split with wedges."

"Can you?" rejoined Ebenezer.

"Yes," said Benny; "John showed me how. "Only," he added, looking at the massive beetle and ponderous wedges that lay upon the sled, "I don't think I could split very well with such a heavy beetle and wedges as that."

Benny was still for a few minutes after this, and seemed to be considering what he had heard; for all these things, though they will appear so simple and obvious to older children who may read this book, were more or less new to him, and it interested and pleased him very much to have Eben-

ezer explain everything to him so patiently. At length, in looking around the sled, his eye fell upon the shovel.

"Ebenezer," said he, "I don't see what you need a shovel for, in the woods."

"To dig out my cattle with, if they get set," said Ebenezer.

"Set?" repeated Benny.

"Yes," replied Ebenezer; "that is, if they sink down into the snow and can't get out again. I shall have to shovel the snow away to make room for them."

"Oh!" said Benny.

"Ebenezer," said Benny again, after another pause, "what do you sit upon a chain for?"

"Oh, so as to have a seat," replied Ebenezer.

"Is not it a hard seat?" asked Benny.

"No," replied Ebenezer, "not particular. It swings a little and it hangs in a sag."

"A sag?" repeated Benny.

"Yes," said Ebenezer, "the chain-sags; that is, hangs down in the middle."

"Is that a sag?" asked Benny.

"Yes," replied Ebenezer; "sag is one name for it."

"Is there any other name?" asked Benny.

"Yes," said Ebenezer;—"catenarian curve."

"Catty what?" asked Benny.

"Catenarian curve," repeated Ebenezer. "But that's rather a hard name. Sag is the easiest name."

"Yes," said Benny, "I mean to call it a sag. But where did you learn such a hard word?"

"Out of a book," said Ebenezer.

"Oh!" said Benny.

While Benny and Ebenezer were talking together in this manner, John and Mary continued at the end of the sled, riding along and talking with each other very happily, until at last Ebenezer turned off into a sort of by-road which led into the woods, and after proceeding in this direction for some time he came to a place where there were some large piles of wood rising up out of the snow, and a great many tops of trees and branches here and there, half buried.

Here Ebenezer stopped the sled, after bringing it up near to one of the piles of

wood, and then put down the bundle of hay before the oxen, to let them employ themselves in eating while he was making up his load.

CHAPTER II.

IN THE WOODS.

WHILE Ebenezer was at work upon his load, the children rambled about the place amusing themselves with running over the snow and examining a thousand curious things that they found.

"Ebenezer," said John, "if we only had some matches we might build a fire."

"I have got some matches," said Ebenezer.

"And will you let us build a fire?" asked John.

"Yes," replied Ebenezer, "if you'll only take care and build it well to leeward of me and my cattle."

By building it to the leeward he meant in the direction the wind was blowing, so that the smoke should be carried away from him and the oxen.

But there was so little wind that it was difficult to find out which way it did blow.

But Ebenezer gave them some matches, and they made a small fire of dry sticks and leaves which they found on the side of a sloping sunny bank, where the ground was bare, and when the smoke from this fire began to ascend, they observed which way it inclined, as it floated off among the tops of the trees, and so found out which way the wind was, and which was the leeward direction.

The children then went to the leeward from where Ebenezer was working at his wood-pile and sled, and there found a large stump, much decayed, which came up out of the snow. There was a hollow in the top of this stump, and they determined to build their fire there. John helped them to set it agoing, and then he went back to see if he could not help Ebenezer at his work.

He found he could help him by piling the small wood upon the sled while Ebenezer was splitting the big logs with his beetle and wedges. While thus employed, the conversation fell upon working with carpenter's tools. John had worked during the winter in making boxes and other sim-

ilar things, by means of simple tools, such as could be used upon a table in the house, or on a board upon the floor; but now that the warm sunny days of spring were coming on he had an idea of making himself a bench at a place where there was a sunny window in a corner of one of the sheds.

"Do you think I could make a bench?" he asked.

"It is easier to make a bench than it is to do any good work upon it after it is made," said Ebenezer.

"Couldn't I learn by myself," asked John, "if I had the tools?"

"You might do it in time perhaps," said Ebenezer, "but learning yourself without instruction would be inventing the art of carpentry anew. You are a pretty smart boy, but that would be rather a serious undertaking even for you."

"Then I do not see what I can do," said John.

"You can do as other young carpenters do," said Ebenezer; "that is, bind yourself out as an apprentice to learn the trade."

"Well," said John, — "if you would take me for *your* apprentice."

"I will," said Ebenezer, "if you only agree to the conditions."

"What are the conditions?" asked John.

"They are only the usual conditions that apprentices have to submit to," said Ebenezer. "Plenty of hard work, no fun, very little that's good to eat, and no pay."

John laughed.

"If you try it," said Ebenezer, "you'll find it no laughing matter."

"No, but tell me seriously, Ebenezer, what you mean," said John.

"Well," said Ebenezer, "I'll tell you seriously. If you intend to have a bench and tools just for play, and think because the tools look bright and curious you can make things with them at once, without learning, then it will turn out just as it always does with boys in such cases. Just as it did in Bill Booby's case."

"How was it with him?" asked John.

"Why, he teased his mother to let him buy a chest of tools. When it came home he looked the tools all over, and was very much delighted; but on trying some of them, he found they would not cut, for being new they had not been ground and sharpened.

"So he had to send them all to a carpenter's to be put in order for work. Then he found he could not work without a bench, and so his mother got a man to come and make his bench.

"When at length he got his bench and everything ready, he determined, for the first thing, to make a martin-house to put up upon the top of a tall pole in the yard. He was going to have it the shape of a church, with a belfry and a spire on the top, and a portico before the door.

"So he got a board and tried to saw it off, of the right length; but he could not make the board hold still. So he said he must have a vice; and his mother gave him some money to buy one, and to pay a carpenter to come down and put it upon his bench.

"Then he tried to saw off his board, but his saw would not go straight; and so the ends of the pieces, when they were sawed, were all askew. When he tried to plane them, the plane would hitch and stick, because it was set too rank. So he knocked out the iron and set it again, and now it would not plane at all. Besides, he had

left the boards that his martin-house was to be made of out in the yard, where the children trampled upon them, and filled the wood with sand and grit, which soon took off all the edge from his planes. When he tried to nail his boards together, first he drove the nails without boring, and they split the wood. Then he tried to bore holes, but he could not bore straight, and the nails came out in the wrong places. Finally he got in a passion and knocked his martin-box all to pieces with the axe, and in doing so he made one of the boards fly and hit his leg, which hurt him very much, and made him more vexed and out of humor than ever. He slammed the tools all back into his chest, and went in and told his mother that the man that sold them the tools was a cheat, — for the tools would not work at all. He could not do anything with them.

“He has had them out once or twice since, and managed in just about the same way, and now his tools are lying about the shed, all rusting and going to destruction.”

“What a silly fellow!” said John.

"But where does Bill Booby live?" he asked, after a moment's pause.

"Live?" repeated Ebenezer. "I don't really like to tell you where he lives, for you might go and get acquainted with him, and so follow his bad example."

"I don't believe there is any such a boy," said John. "Is there really?"

"Yes," said Ebenezer, gravely, "there are a great many such boys."

"But tell me about my being your apprentice," said John.

"Well," said Ebenezer, "I'll tell you. The first thing to be done in learning to work at a carpenter's bench is to learn to saw and to plane. And the best way to do that is, not to begin at first with attempting to make anything like a martin-house to go on a pole, with belfry and spire and portico complete,—but only to saw for the sake of learning to saw, just as you write copies in a writing-book, for the sake of learning. But there's no particular fun in that sort of work, I can tell you. It is hard work and dull work. Still, if you wish to *learn*, that's the way; and if you do, I'll take you for my apprentice and let

you do some sawing and planing for me, to teach you. If you do that, you can then, if you choose, have a bench, and a saw and plane of your own, and there will be some sense in it."

"When must I come?" asked John.

"Whenever you like," said Ebenezer. "Only you can't work more than an hour at a time, for it will be steady sawing and planing, and you'll get tired in an hour."

"Well," said John, "I will tell my mother about it, and see what she will say."

"But remember," said Ebenezer, "that this is a plan for *my* benefit and not for yours. When a carpenter takes an apprentice it is for his own benefit, and not to do the apprentice a kindness. I have got considerable sawing and planing to do, for a certain job I have in hand, and I think it will be easier for me to get you to do it, notwithstanding the trouble I shall have in showing you how; and if you think that the advantage of learning will be enough to pay you for all the work you will have to do, without making anything for yourself, then it will be a good bargain all around."

By this time Ebenezer's load was ready, and the children's fire, too, was wellnigh burned out. So Ebenezer set out on his return. The children rode upon their sleds behind the ox-sled, having fastened the cords to the ox-sled stakes, one on each side. They went on in this way very safely for a time, but at length their progress was suddenly arrested by what seemed at first to be quite a serious accident.

CHAPTER III.

A DIFFICULTY.

THE accident which occurred was the sinking of the oxen down into a deep drift at a place where the snow had been warmed by the sun which shone in there upon it through an opening in the tops of the trees at a turn in the road.

It happened, moreover, that the snow here was very deep; and being soft to the bottom, the oxen sank into it up to their shoulders.

When they first began to sink, Ebenezer tried to hurry them on so as to get over the bad place quick. The children, who were riding at their ease upon their sleds behind, heard him shouting to the cattle, and so they jumped off and ran round to see what was the matter.

By the time that they came where they could see, they found that the oxen had sunk deep into the snow, but were stand-

ing very still and quiet there, chewing the hay that they seemed to have still in their mouths, and looking now and then up to Ebenezer with a perfectly calm and contented expression of countenance, as if they had full confidence in his being able to do what was required to get them out, and in the mean time felt entirely at their ease.

"Now, Ebenezer," said John, "it is a great pity that you did not bring your horses instead of the oxen; for they have got much longer legs, and so can wade through deeper snow."

"No," said Ebenezer. "You see, if I had my team of horses in such a fix as this, they would go to struggling and thrashing about, and would break everything to pieces. The oxen stop and stand quiet, waiting for me to come and tell them what to do."

"I don't see what you are going to do," said John.

"You don't see now," said Ebenezer, "but wait a little and you *will* see."

Ebenezer went to the side of the sled and took the shovel, and then going out

before the oxen, he began to dig the snow away. The oxen stood perfectly quiet and allowed him to work close to them and all around them. Benny was very much astonished to see how little regard he seemed to pay to their heels and horns.

"Look out, Ebenezer," said he, "or they'll hook you."

"No," said Ebenezer, "they won't hook me. They don't wish to drive me away. They want me to stay here and dig them out."

The snow was very damp and heavy, and came out in large masses as Ebenezer shovelled. He did not however throw out a great deal of the snow, but seemed intent rather on breaking the continuity of it, and trampling it down, than taking it out.

"Ebenezer," said John, "you will have to shovel out more snow than that, or else the oxen will never be able to get out."

"I must not shovel out too much," said Ebenezer, "for if I do the sled will sink down into the hole so deep that I can't get that out."

After working in the snow in this way

for a few minutes until it was pretty well broken up, Ebenezer came out upon the hard snow on the side, saying, —

“Now, Bossies, I think it will do for you to start up a little.”

The oxen, or bossies as Ebenezer called them, remained perfectly quiet, waiting for him to give them their orders. Ebenezer took up his goad-stick, and standing on the hard snow at the side, he gave the command to the oxen to move on a little, and as soon as they had taken two steps he stopped them again.

The oxen obeyed his orders implicitly, and with an air of perfect resignation and composure. They took the two steps very slowly and deliberately, and then stopped, chewing the hay in their mouths all the time, as if they felt perfectly satisfied that if they quietly obeyed their master's directions he would certainly get them out of their difficulty.

“Now, Ebenezer,” said John, “if you don't look out you will get your sled down into that great hole that you have dug, and then you can't get it out again.”

“That's just what I am going to try to prevent,” replied Ebenezer.

So saying, Ebenezer began to take off some of the smaller sticks of wood which lay on the top of the load, and to thrust them through under the tongue of the sled, between the oxen and the forward end of the runners. The children saw at once that his object was to make the runners slide over on these sticks, and be prevented by them from sinking down into the loose snow so far as they otherwise would have done.

For by this arrangement the weight of the load, as the philosophers say in such a case, instead of pressing wholly upon the narrow portion of the snow which came under the edges of the runners, would by means of the sticks of wood be *distributed* over a wide surface, and so be better borne up.

Thus a piece of board laid down over thin ice will sometimes make it safe to walk over it, when without such a distributor of your weight it would be very dangerous. It is well to remember this, for when a boy breaks through the ice on any pond or river, and the ice around the hole is too thin for the other boys to go near

enough to help him, the first thing is to run to the nearest fence and get some boards to put down, and this will make it comparatively safe.

Ebenezer could not cover the whole of the loose snow in the hole with sticks of wood on account of the oxen being in the way, but after putting in enough to cover the space between the heels of the oxen and the forward end of the runners, he started the oxen on again a few steps. The oxen were perfectly obedient and quiet, and took a few steps at a time, just as Ebenezer ordered them; and as fast as they advanced, Ebenezer put sticks down to continue his bridge, so that the sled could follow without sinking much. In this way he went on until the oxen climbed out upon the hard snow where the sun did not shine; and, the sled following them, all the trouble was over.

"There, John," said Ebenezer, "that's the way I want *you* to act when you get into difficulty with your work, if you come to be my apprentice. Take pattern by my oxen. Don't go to thrashing about and trying to get out of your trouble by vio-

lence, and break everything to pieces, as horses would have done in that hole, but stop at once, and wait till I come to help you out, and then do just as I say, step by step, quietly."

"Yes," said John, "I will."

"And now," said Ebenezer, "help me load on these sticks again."

So saying, Ebenezer began to take up the sticks which had been laid down in the snow. John helped him. John chose for his part all the smaller sticks, and left the larger ones for Ebenezer.

"You are wiser than Bill Booby was," said Ebenezer.

"Why? what did he do?" asked John.

"When I asked him to help me once," said Ebenezer, "he would not take the small sticks which were suited to his strength, but chose one of the biggest ones to show what he could do. He got up one end of this stick, and then called out to me that the sticks were so heavy that he could not lift them, and he wanted me to come and help him. Finally, as I did not come, and he found that he could not hold up the heavy stick any longer, he had to let it drop, and it fell on his toes."

"Did he hurt himself much?" asked John.

"I don't know," replied Ebenezer. "I suppose he did by the noise he made. But you can't tell much by that, after all, in his case."

"Ebenezer," said John, after a short pause, "who is Bill Booby? I don't believe there is any such a boy."

"Oh, yes," replied Ebenezer; "there are a great many such boys."

When the sticks of wood were all put on, the children mounted upon their sleds, behind the ox-sled, and Ebenezer drove on. In a short time they came out of the woods into the main road, where the track being well trodden and worn, there was no further danger of sinking in. They proceeded in this way until they reached the farm-house where Ebenezer lived, and from there the children went home by themselves, along by the side of the road, choosing the shadiest places that they could find under the trees and fences, for by this time the snow was becoming so soft that in the sunny places it would scarcely bear them.

CHAPTER IV.

PART OF A CORD OF WOOD.

JOHN was very impatient to commence his apprenticeship in Ebenezer's shop. But Ebenezer had fixed the time for beginning at the first stormy day, and unfortunately for several days after the excursion into the woods the weather was very pleasant.

The nights were cold it is true, but the mornings were calm and still, so that it was charming weather for taking long rambles over the country on the crust. It was also most excellent weather for making maple sugar.

One morning John's cousin Mary came to her Aunt Gay's house to propose to John and Benny to go and take a walk on the crust. She found John out in the yard behind the house, busily engaged with Benny in doing something to a pretty large hand-sled which the two boys had there. It was not either of the sleds

which the boys used when they went to slide, which both had steel runners, and a prettily painted top and sides; but was a wooden sled, of the kind called a frame-sled, the sides and the top being formed of open work, and the runners consisting of broad strips of ash-wood bent into the proper form.

Thus it resembled in some degree the large wood-sleds used by the farmers with oxen, and the resemblance was increased by a row of stakes upon each side, the lower ends of which fitted into holes made in the top bar there.

When Mary arrived at the place, she found that the boys had already put a hatchet into a sort of socket which John had made for it upon one side of the sled, and they were now securing a small shovel, which they had borrowed from the house, in the other side. There was a small tin pail, with a cover, hanging from the top of one of the stakes.

As soon as John saw Mary, he exclaimed, "Ah, Mary, I am very glad you have come. We are going out into the back lot, to get a load of wood."

The back lot, as they called it, was a piece of ground, belonging to John's mother, which lay beyond the garden, and was used as a pasture for the horses and the cow. There were woods in this back lot, in different places, and a brook running through it; and in some parts there were high rocks, and near them deep ravines.

"We are going to get a load of wood, and mother is going to pay us for it," said John. "She is going to give us three dollars a cord. How much is a cord?"

"I don't know exactly," said Mary. "Only I know it is a great big load. You never can get a cord on that little sled, — never in the world."

"Oh, we don't expect to get a whole cord," replied John. "Mother is going to pay us in proportion. If it is half a cord, then we are to have half of three dollars, and so on."

"I don't believe you can get a half a cord on such a little sled as that," said Mary.

"A quarter of a cord then," said John. "Besides, this is not a little sled at all. It is a pretty big sled."

"No matter," said Mary; "I will go with you and help you get the wood."

Accordingly, when the sled was ready, they all set off together toward the woodlot. There was a regular road to the lot, through a little lane which led along by the side of the garden. This was the way by which the horses and cow went in the summer-time, but now the snow was so deep and hard that the children could go over the fences in every direction; so they paid little attention to roads.

They went first across the garden, and then winding down through a valley and up an ascending piece of ground beyond, they went on, talking together of their plans, until they came to the margin of the wood.

"Now," said John, "here is the place. We will go into the woods here, and we shall soon get a load."

So they went into the woods, but they were not so immediately successful in procuring their load as John had hoped to be. For a time all the trees that they found were evergreens, and the snow around them was smooth and clean, with no broken

branches or loose pieces of wood anywhere to be seen.

They went on farther until at length they came to what John said was just the place. There was a kind of sunny bank there, where the snow had been all melted away, and the ground was covered with moss and dead leaves, and there were also many of what appeared to be loose sticks lying around upon the ground.

These sticks, however, upon attempting to take them up, proved to be, most of them, very *tight* sticks, as the lower ends of them were frozen hard into the ground. Some of them were quite brittle, however, and could easily be broken off; but others seemed to be very tough and strong, and these John, after in vain endeavoring to break them off, where they were frozen into the ground, attempted to cut off with his hatchet.

But he encountered unexpected but very serious difficulties in doing this. Around each of the stems where it entered into the ice and frozen ground, there was a little space surrounding the wood, where the snow had been melted away by the reflec-

tion of the sun's rays from the sides of the stem. This space had a little water collected in it, and whenever John struck the stick with his hatchet, in attempting to cut it off, if he struck near the ground, this water flew up into his face.

If, to avoid this spattering, he attempted to strike upon the stem at some distance from the ground, the stem was so elastic that it would spring away from the hatchet at every blow, and the edge would not enter it at all.

So John gave up attempting to cut wood, and he with the others began to look over the ground for such pieces as were either already loose, or were so decayed and brittle that they could be easily broken. They worked in this way for some time, until at length they got the bottom of the sled covered with one or two tiers, but they saw very plainly that they were making very slow progress toward getting a cord.

"It is *part* of a cord, at any rate," said John.

Presently John heard Benny calling out to him, from behind a thicket, where he had gone in search of sticks.

"John," said he, "come here; and Mary, too. Here is a sliding-place."

"Well, we'll come," said John; "but do not go on it till we get there."

They went to the spot and found that Benny had indeed discovered an excellent sliding-place. It was a sheet of ice formed where the snow had melted the preceding day, and then frozen again in the night. The children were all so much pleased with this sliding-place, that they forgot their load of wood, and continued sliding for some time.

At last they began to get tired of this, and John said, —

"Let us go and eat our luncheon. I begin to be hungry."

"Have you got anything for a luncheon here?" asked Mary.

"Yes," said John, — "in our tin pail."

So the children all went back to the place where they had left the sled, and there sat down in a sunny nook under some rocks, and began to take out the luncheon from the pail. It consisted of some doughnuts, some pieces of pie, and two or three slices of cheese, — all wrapped up carefully in separate papers.

Just as they had finished eating their luncheon, John thought he heard a voice as of a man calling to his oxen, over in the woods at some distance off.

"I verily believe that is Ebenezer — making sugar in his maple-woods," he exclaimed. "That is the place, out there, where he makes his sugar. Let us go and see."

The idea of having some maple sugar or syrup, by way of dessert after luncheon, was of course very agreeable; and the children all at once set off, drawing the sled, with the part of a cord of wood upon it, after them, in the direction of the sound that they had heard.

They found that it was really Ebenezer at work in his sugar-bush. When the children reached the place, they found a kind of rude shed made of the branches and boughs of trees, under which two or three large kettles were set in brick-work, with fires under them to boil down the sap. There was a rude seat, formed of a board, under the shed, and two or three saucers with pewter spoons in them upon it.

The smoke from the fires was carried out



THE SUGAR CAMP. Page 44

by flues to a big chimney, made of flat stones cemented with clay, which went up through the roof of the shed.

When the children arrived at the camp, as it was called, they found Ebenezer just coming to the place with a load of sap, which he was bringing in several barrels upon a sled.

"Ah, John," said he, "you are just the boy I want to see. I have broken my chain and I want another, and if you will go down to our house and bring me one, I'll give you your pail full of sap half boiled down."

"Half boiled?" asked John.

"Yes," said Ebenezer, "it is half boiled, and you can finish boiling it in your garden when you get home. You have got your wood already on your sled, I see."

"Agreed," said John. "We will go. Only I wish you would pay us a little in advance."

"Yes," said Ebenezer, "that I'll do. I'll pay some that is nearly finished, in advance."

So he took three of the saucers from the seat, and with a great ladle he dipped out

some quite thick syrup from one of the kettles, and filled each saucer nearly full.

The children took the saucers and sat down upon the seat under the shed to eat the syrup. It was very hot, and they had quite a merry time together while they were stirring it and waiting for it to cool.

Ebenezer, while he was employed in emptying the sap from his barrels into one of the kettles, gave John the directions in respect to finding the chain in a certain place in his father's barn, and then went off after another load.

The children found the sap delicious when it became cool enough to eat, though still quite warm, and when they had finished it, they went off over the snow to the house where Ebenezer lived, in search of the chain.

They took their sled with them to bring up the chain upon, having previously taken off the wood and piled it up neatly near the shed.

They returned in about half an hour, bringing with them the chain. Then Ebenezer filled their pail with the half-boiled sap, putting a piece of paper over, before he

shut the cover on, to prevent any spilling. The children then put the wood upon the sled again, and hanging the pail in the middle of a strong string which Ebenezer tied across from one stake to another, where it could swing freely and easily while the sled was passing over jolting places, they all set out on their return home.

On their arrival at the house, John went in and told his mother that they had got *part* of a cord of wood, but they had concluded that instead of selling it to her, for three dollars a cord, they would use it themselves in boiling down some sap which Ebenezer had given them. His mother said she thought that this would be an excellent disposition to make of the wood, and Bridget would let them have a kettle, she added, to boil their syrup in.

So John, having obtained the kettle, carried it out into the garden, and choosing a clear open space there, near a seat, he kindled a fire and suspended the kettle over it by means of a short pole, the ends of which were supported by two crotched sticks which he stuck down into the snow.

When dinner-time came there was a

difficulty, for they thought that it would not do to leave the syrup over the fire while they were gone, for fear it should boil over. So they agreed that John should remain and watch it while Mary and Benny went in to dinner, and then Mary and Benny were to attend the boiling while John went in.

The syrup was quite sweet and good when they first put it over the fire, and it grew rapidly thicker and sweeter as the boiling advanced. The children all had saucers and spoons, and kept trying it continually. At one time John went in and got two extra saucers, and carried in two specimens of it into the house,—one for his mother and one for Bridget,—they two being, as it happened, all the people who were at that time at home.

Thus the stock of syrup which they had brought down in the pail was subject to a double means of diminution. The aqueous or watery portions were rapidly driven off by the boiling into the atmosphere, while the saccharine or sugary ones were taken off more rapidly still by the saucers and spoons. At last so little remained that

John thought it was not worth while to boil it any more, and so they took the kettle off the fire, and putting it on the broad flat top of a post, — which appeared near by, rising a little way out of the snow, — they gathered around it and ate up what was left as fast as they could with their spoons.

CHAPTER V.

AN INDENTURED APPRENTICE.

THE first rainy day that came, John went to Ebenezer's to commence his apprenticeship. He had his choice of days, for it was at this time vacation at his school, so that, except one hour each day that he and Benny were required to spend at their studies, he had all his time at his own disposal. He very wisely determined to embrace the opportunity offered by this vacation to serve his apprenticeship at sawing and planing with Ebenezer.

John found Ebenezer, as he expected, at work in his shop. He was engaged in doing something about a lathe that he was making, and which he was intending to put up at a certain window near one corner of his shop.

"Ebenezer," said John, "I have come to begin my apprentice work."

“Very good,” said Ebenezer. “But did you ever hear of a runaway apprentice?”

“Yes,” said John, “I have heard of such a thing.”

“I’ll tell you how it happens,” said Ebenezer. “At the beginning the master-carpenter has more trouble in teaching the apprentice how to begin to use the tools—twice over—than all the good the apprentice does him. For a while he could do as much work himself in half the time that he spends teaching the boy, than the boy can do in all the time.

“So, you see, at the beginning the boy gets all the good, by being taught, and his master gets no good at all, or very little. But after a time, when the boy begins to understand it, then he can give his master some help, and so the master gets paid back for the time he lost at first.

“That is,” continued Ebenezer, “if the boy is faithful and stays long enough! But sometimes, after he has learned to work tolerably well, instead of remaining to work for his master, as he agreed, he runs away and goes off to some other town, and there goes to work for some

other carpenter, who will pay him. So he gets his instruction for nothing."

"That is very dishonorable, I think," said John.

"Yes," said Ebenezer; "but the apprentice always has some excuse for it. He says his master is cross to him, or makes him work too hard, or does not give him enough to eat; or he makes some other complaint of that kind."

"And what does his master do?" asked John. "Does he go after him and bring him back?"

"No," said Ebenezer. "Such a boy is not generally worth bringing back. Sometimes he advertises him in the papers, with a picture of him at the beginning of the advertisement, running off as fast as he can run, with his bundle of clothes on his back.

"But to prevent their apprentices from doing so," continued Ebenezer, "the masters generally bind them by an indenture to stay a certain time. An indenture is a contract in writing. The reason why it is called an indenture is, because it is, or at least it used to be, made in two parts, one

for the master and one for the apprentice, and these two parts are written on the same sheet of paper and then cut apart in a waving line, so that the edges of both papers are *indented* in exactly the same way, and thus they will fit each other precisely."

"What good did that do?" asked John.

"I don't know exactly," said Ebenezer. "They thought they could put them together again, and if the two parts fitted, that would show that it was all right. But now I am going to indenture you, or else I might expect, that, after you have sawed here three or four times, and I had had all the trouble of teaching you how to do it, you'll get tired and so not come any more. I'm not willing to begin unless you agree to come seven days — and saw for me one hour each day."

"And how about planing?" asked John.

"That will be a separate apprenticeship," said Ebenezer.

"Well," said John, "I will agree to it."

"Then go and open that drawer," said Ebenezer, pointing to a drawer, "and take

out a piece of paper and an inkstand and pen that you'll find there, and come to the bench, and write what I shall tell you."

John did so, and when he was ready, Ebenezer directed him first to fold the sheet of paper in two, from one side to the other, so as to make the fold run down in the middle, from the top to the bottom. He was then to write what Ebenezer dictated first on the left-hand side of the line thus made.

Ebenezer dictated, and John wrote as follows: —

"This indenture witnesseth that John Gay binds himself to Ebenezer Greenwood as an apprentice for seven days, an hour each day, not less than three days each week, and that Ebenezer Greenwood promises to teach him the art and mystery of sawing."

Having written this, John, at Ebenezer's direction, made a second copy of it on the other half of the paper, and then both the parties signed both the documents. Ebenezer then, after laying the paper down

upon the bench, cut the two documents apart with the point of his knife in a waving line, and gave one of them to John, and put the other in his pocket.

“There,” said he, “now you are a regularly indentured apprentice; and if, after you once begin, you get tired of the agreement, and don’t come and serve your time out, I shall have a right to consider you as a runaway apprentice, and to put an advertisement about you in the papers, and put a picture of you at the beginning of it, running off with your bundle on your back.”

John laughed and said, “Very well; I’ll give you leave.”

CHAPTER VI.

LAYING OUT THE WORK.

BEFORE John commenced his work, Ebenezer explained to him that the job of work which he had undertaken, and which required so much sawing, was this, namely, to complete the enclosure of a part of the yard between the barn and the shed, by making a high fence of palisades across the open part; and the work which John was to do was to saw out the palisades.

"They are to be three inches wide," said Ebenezer, "and to be set three inches apart. Thus it will take six inches in breadth, of stuff, or two palings, for every foot of space. Now the distance is about sixteen feet, and that will require thirty-two palings, and I am in hopes to get them all sawed out in the course of your seven days' apprenticeship. By the time you have done that work, you'll begin to be a pretty good sawyer."

So saying, Ebenezer went out and took down, from a loft overhead in the shed, a long board, and bringing it into the shop he laid it across two saw-horses which were there all ready for it. These were of course carpenter's saw-horses, that is, they were in the form of benches with flat tops.

"Now," said Ebenezer, "the first thing you have got to do is to determine which is your straight side."

"Both sides of the board are straight," said John.

"Then you must decide which you will take to square from," said Ebenezer. "The sides of a board, as it comes from the mill, are generally not parallel. The board *tapers*, as the stem of the tree did that it was sawed from. You must choose one side or the other for the one you will square by, in cutting it up into lengths, or else if you cut across in one place, squaring by one side of the board, and in another place by the other side, your cross-cuttings will not correspond."

So John chose one side of the board as the best to take, and Ebenezer told him he must remember which he had chosen,

and do all his measuring and squaring from that.

"Now," said he, "lay down the square with the short arm across the board, as close to one end as it will do to go, and mark a cross-line."

To do this, Ebenezer gave John a large iron square, such as carpenters use in framing buildings. This is different from a joiner's square, which has one arm of wood, that is made pretty thick, while the other one, which is of steel, is quite thin, so that the square will fit as it were upon the edge of the board that it is applied to. Both arms of the carpenter's square, on the other hand, are of thin iron or steel, and are precisely alike, except that one is usually two feet long and the other only one foot. Both have the inches marked upon them, each inch being subdivided into eighths, and sometimes into sixteenths; though, ordinarily, for the rough carpenter's work that these squares are chiefly used for, it is very seldom necessary to work more accurately than to the *eighth* of an inch.

"Now," said Ebenezer, "measure from your cross-line along the board, four feet

seven inches with the two-foot arm of your square. That's to be the height of my paling."

"You ought to say the two-*feet* arm of your square," said John. "Two *foot* is incorrect, because foot is singular."

"It is not so in the shops, at any rate," said Ebenezer. "It is exactly the contrary. It would be very singular to say two-*feet* rule among the carpenters, and to say two-*foot* rule would not be singular at all."

John was somewhat puzzled by this reasoning, and he was still more perplexed at Ebenezer's asking him, —

"And ought I to say, according to grammar, a ten-pence nail, instead of a ten-penny nail?"

Like most reasoners, who, when they have once enunciated a principle, think they must stand by it, wherever it carries them, John said, though rather faintly, —

"Why, yes, certainly. *Ten penny* is not correct. Penny is singular."

"Oh, John," said Ebenezer, laughing aloud, "think of my going to the hardware store and asking for a pound of ten-pence nails, and all to avoid being singular."

And Ebenezer laughed again, louder than ever, at the idea.

Then suddenly checking himself, on perceiving that John looked a little troubled, he said, —

“I'm not laughing at you, John. I am laughing at the grammar. You are right about it, I don't doubt. That's what the grammar says. But never mind that now. Measure off from your first cross-line four feet seven inches, to the place where you are to make the second one.”

“What do you put the seven inches in for?” asked John. “Why don't you make it exactly four feet?”

“Because my boards are about fifteen feet long,” said Ebenezer, “and I find I can get out three lengths of four feet and seven inches, and that is all I *can* get, — allowing for the waste at the ends.”

In obedience to Ebenezer's directions, John applied the two-foot arm of the square to the board twice in succession, marking the place of the end precisely at each application, with the marking-awl. At the third application he pressed the point of the awl into the board at the place where the mark for seven inches came.

"There," said Ebenezer, "that's the end of your first length. Mark it with a V."

"With a V?" repeated John.

"Yes," said Ebenezer. "I'll show you how."

So saying, Ebenezer took the marking-awl, and putting the point at the little hole which John had made to mark the seven inches, he made two scratches from the point, first in one direction, and then in another at a little distance from the first, thus making a rude resemblance to the letter V.

"There," said Ebenezer, "that's the way that carpenters mark the places where they are going to cut. The V helps them see and find the place quicker, and distinguishes it from those where they only made a prick to mark the end of the square or rule in measuring. And when you come to plane your board, these scratches will all plane out."

"And now," continued Ebenezer, "mark a line to saw by, right across the board, exactly through the point of the V."

John was proceeding to do this, and had placed his square in what he thought was

the right position, when Ebenezer interrupted him, saying, —

“Stop; that is not right. You are squaring by the wrong side of the board.”

John at once perceived his mistake, and immediately changed the square so as to make the cross-line that he was about to draw, square with the edge of the board which he had selected at the outset to be governed by.

“Always,” said Ebenezer, “when you are going to saw off a board, lay down the square, and make a mark to saw by. Bill Booby’s way is to saw first, and then put on the square to see if it is right afterward.”

“What does he do so for?” asked John.

“Because it is easier to guess than to measure and mark,” said Ebenezer. “But he guesses wrong, and so he has to saw again, and that makes his board too short.”

“Hoh!” exclaimed John, in a tone of contempt, “he might have known that. And what does he do then?”

“He tries his board,” replied Ebenezer, “and when he finds it is too short, and won’t do, he throws it down upon the floor

or ground, in a pet, — saw and all, — and goes off to play.”

By this time John had measured off the three lengths upon the board, and had marked the cross-lines, taking care to square them all by the same side of the board. The last line came within a few inches of the end of the board — just near enough to clear the cracked and rough part of the end.

“ And now,” said John, “ shall I get the saw and saw them off ? ”

“ Not yet,” replied Ebenezer. “ You have got to make the other lines, lengthwise of the board, to divide it into strips for the palings.

“ You are first,” said Ebenezer, “ to measure off the width of the palings on the first cross-line that you made near the end of the board. The palings are to be three inches wide, but you must measure them off three inches and a quarter.”

“ What is the quarter for ? ” asked John.

“ For waste,” said Ebenezer. “ You see, if you had a board exactly six inches wide, and were to saw it in two, lengthwise in the middle, the two parts would not be

quite three inches wide each — for the saw would have taken out some of the wood. The two together would fall short of six inches, after they had been sawed apart, by the breadth of the cutting made by the saw."

"But that would be only a very little," said John.

"True," said Ebenezer, "it would be but little; but it would be something, and you must allow for it whatever it is, if you wish your work to be exact.

"Besides," continued Ebenezer, "it is not possible for any person to saw perfectly straight, by hand. You can do it more nearly straight by machinery; but by hand the saw will deviate a little, and make a waving line. Then when you come to plane the edge, you have to plane all these wavings off, and that narrows your board still more. So the carpenters generally allow about a quarter of an inch for waste. But I think that, on the whole, *you* must allow more. You see, your first sawing will of course be pretty crooked, and the edges will have to be planed down more. You had better allow three eighths."

"How much is three eighths?" asked John.

"Why, two eighths of an inch is a quarter," said Ebenezer, "and so three eighths is a quarter and half a quarter more. We allow one eighth for the extra crookedness of apprentice work. That's a very small allowance. I am afraid you won't be able to saw with as little waste as that. But I don't like to allow any more, for fear that my boards should not be wide enough."

So John took off, with a pair of compasses which Ebenezer brought him, the distance of three inches and three eighths from the long arm of the square, and laid that distance off as many times as it would go, on the first cross-line of the board, pricking deep holes at the points which he marked. While he was doing this, Ebenezer brought the chalk-line, — a long white cord, wound upon a spool. Ebenezer brought the spool in one hand, and a piece of chalk in the other.

"Now," said Ebenezer, "it takes two to use a chalk-line to good advantage if the board is long. I'll stay at this end with one end of the line, and you take the spool

and unwind it as you go along to the other. Take this piece of chalk, too, and rub the chalk-line over it well as you go along."

Ebenezer passed one of the points of the compasses through the loop in the end of the chalk-line, and then pressed the point down into the wood at the mark which John had made at the first distance of two inches and three eighths. As he did this he held the dividers in a slanting position, — the top slanting off toward the end of the board. By this means, when John drew the line tight, the loop was drawn down close to the point of the dividers, and this made the line lie close along the surface of the board.

"Now, John," said Ebenezer, "lay down your square with the edge of the long arm exactly upon your last cross-line, and then pull the end of the chalk-line exactly across the mark for three inches and three eighths, on the edge of the square, and then snap the line."

John did so, and a long white line was made from end to end of the board, and just three inches and three eighths from the edge which John had chosen as the one to measure from.

In the same manner the two boys chalked all the other lines of division running lengthwise of the board. The board was about a foot wide, — not quite a foot wide at one end, and a little more than a foot at the other. So that there was only breadth enough for three palings and a strip an inch or two wide at one end, and three or four in the other.

“There!” said Ebenezer, surveying the marks on the board with an air of satisfaction; “there’s your work all laid out. Now for the sawing.

“There’s a strip to come off on that side,” he added, “and we’ll take that off first, so as to save it of the whole length. We may want a long piece for something or other, and it is always best to take off *first* what is going to be left of your stuff, so as to save it whole — instead of cutting it up with the rest. So now go and get the saw.”

CHAPTER VII.

SAWS AND SAWING.

THERE were several saws hanging up in a row near the end of Ebenezer's bench, two of which — the two largest — looked very much alike. John took one of them at random, and brought it to Ebenezer.

Ebenezer, after looking at the teeth of it, told John that he had brought the wrong saw. It was the other one, he said, that was for sawing lengthwise of the board. The one which John had brought was for sawing crosswise.

John said that both the saws looked exactly alike.

"The *teeth* are different," said Ebenezer.

Ebenezer then showed John the teeth of the two saws, and pointed out the difference between them.

There is something very curious about this, and something which it is a good thing for all boys to understand, although

without actual saws to look at, it is somewhat difficult to understand. But I will try to explain it.

In a board, the fibres of the wood always run of course lengthwise, so that in sawing across the board the saw has to cut *across* the fibres and to take out, as it were, a piece of each.

The teeth, therefore, in a saw for sawing across, are made to spread a little to each side — one tooth being bent over to one side, and the next to the other, and so alternately — and they are filed in such a manner as to present sharp edges running *lengthwise of the saw*. When such a saw is in use, to cut across a board, the outer points of the teeth cut the fibres across, one on one side of the cleft, and the other on the other, and the middle portions push the pieces that are cut off, out.

In sawing lengthwise of the board, the cutting edge of the teeth is *across* the saw, instead of being lengthwise of it, because the fibres of the wood now lie in a different direction. This gives the teeth of the two kinds of saw quite a different appearance, if you examine them minutely, although

the general appearance of the saws themselves are much the same.

John having obtained the right saw, now laid his board down lengthwise upon the benches — which he had previously placed end to end, so as to lengthen the line of support. He placed the board in such a position, that the edge which he was going to saw off should project a little beyond the edge of the benches. Then he began to saw.

“Now,” said Ebenezer, “the thing to be done is to carry your saw *true*, without bending it from side to side, and keep exactly upon the line, and also bear on very gently.”

So John began, and though he went very slowly at first, he went very correctly, and kept very close to the line. When he found that he was deviating a little, he contrived, by turning the saw a little one way or the other, to work back to it again.

After going on a little way in this manner, John had proceeded so far that the strip of wood which he was cutting off, becoming long, began to move about, up and down, and sometimes made the saw *bind*

a little; and so Ebenezer directed him to get a small piece of wood for a wedge to put into the cleft, to keep the strip steady, and also to hold the cleft open a little, so that the saw would run more easily.

John looked under the bench and found a piece of wood which he thought would do for a wedge, only the end wanted sharpening.

"Shall I take your broad chisel and sharpen it?" said he.

"No," said Ebenezer. "I have not taught you to use the chisel yet, and it would not be safe."

"What would be the danger?" asked John,—"that I should cut my fingers?"

"No," replied Ebenezer. "I am not afraid of that. We don't usually give ourselves much concern about our apprentice's fingers. The damage that I fear is, that you might dull my chisel, and that would be of much more consequence. You see if you cut your fingers, they will get well of themselves, after a little time; but it would make me a great deal of trouble to sharpen up my chisel, if you were to get it dull."

Ebenezer finally told John that he could

open the cleft wide enough to put in a narrow piece of wood without sharpening the end; and John did so, and then went on with his sawing.

After he had got to the end, Ebenezer came and took sight along the edge of the board where John had sawed, to see how straight it was. John stood by, looking on curiously, waiting the result of this inspection.

"Have I sawed it pretty straight?" he asked.

"We don't praise apprentices much," said Ebenezer, "especially when they are beginning, for fear it should make them conceited. People that know very little are always apt to be very vain of what little they do know."

John saw however, plainly, by Ebenezer's looks, that he was well satisfied with what he had done.

"After you have sawed the boards across into short lengths," said Ebenezer, "you can see for yourself whether you have done it well or not, for I shall put them to a test."

"What test?" asked John.

"You 'll see," said Ebenezer. "But now get the other saw, and saw across where you have marked."

So John changed the saw for one intended to saw across the grain, and then began the second part of his work. He first cut off the end-piece, and then proceeded to the next cross-mark, and to the next, until he had cut out the three lengths into which the long board had been divided. While he was going on with this work, Ebenezer watched him from time to time, to see whether he was holding the saw straight, and carrying it true, and also whether he was following the marks exactly.

At first John found the work very fatiguing, and he was obliged to stop quite frequently to rest; but as he went on he found that it became gradually easier. The saw seemed to work more freely in the cleft than it did when he first began.

At one time, when he was stopping to rest, he asked Ebenezer what the reason was that the saw went easier. Ebenezer told him it was because he carried it more true.

"You see," said he, "that, if when you are sawing you twist and wrench your saw from side to side, it will get pinched and bound in the cleft, — or if it does not get actually bound, it will rub hard, sometimes on one side and sometimes on the other. To saw easily, you must carry your saw very true, exactly up and down, in the centre of the cleft."

As soon as John had sawn off the board at all the crossings, Ebenezer told him to take the three lengths and set them up together, on end, upon the floor, and see whether they would stand exactly together.

When John had placed the boards in the position which Ebenezer had directed, Ebenezer said, "Now if the bottom-ends are square, then the boards will all stand upright together, and the edges will come together all the way up. But if you slanted the lines different ways, either in the marking or in the sawing, then the edges will not come together at the top, but some will crowd out one way or the other."

"They don't come exactly together," said John.

"They are pretty near," said Ebenezer. "And now, if the boards were measured and sawed to exactly the same length, the tops will all come on a level."

"They don't come exactly upon a level," said John, "but pretty near."

"They are near enough," said Ebenezer.

"And now," said Ebenezer, "you have done enough for to-day. It does not do to work apprentices too hard when they first begin. Put the boards that you have sawed out together in a pile by themselves, — carefully, so as not to rub out the chalk-marks, and clear away the rubbish. The next time you come you shall saw them up into strips. And now you can come, if you please, and see what I am doing about my lathe."

After this first lesson John had afterward very little difficulty. The next time he came he sawed along the chalk-lines in each of the boards which he had cut out, so as to divide each board into three palings; and as there were three of the boards, it made nine palings in all which he obtained from the first long board.

The second long board John sawed

entirely by himself, also the third and the fourth, which made thirty-six palings in all, which Ebenezer said was enough. By this time he had become quite an expert sawyer for common work, and on good lumber.

"But don't get conceited," said Ebenezer, "and imagine that you understand all about sawing just because you have learned to do plain work like this. There are a great many other kinds of sawing, such as scroll sawing, and key-hole sawing, and fine sawing, and a great many other kinds. And I advise you, if you have a bench and a saw, not to attempt to saw anything but good, fresh, new, and dry boards. If you attempt to saw wet, or old, or crooked-grained boards, you'll be sure to get into difficulty."

John finished the work of sawing out the palings before the end of the sixth day of his apprenticeship, and then Ebenezer said that he would give him the rest of his time.

"We sometimes do that," said he, "when an apprentice has been industrious and faithful. We give him some of the last

of his time, so that he can work for himself and earn some money. So I'll give you your time for the seventh day; and if you are of a mind to come and saw out one more board into strips for a gate that I am going to make, I'll pay you by turning you something in my lathe when I get it done."

"Well," said John, "I will come. But what will you turn me?"

"I'll turn you some tool-handles," said Ebenezer, — "or a mallet. We can turn very pretty mallets in the lathe."

"Could you turn me a pair of handles for a jumping-rope?" asked John.

"Yes," said Ebenezer, "very easily."

"Then do that," said John. "I want a pair of handles for a jumping-rope for my cousin Mary."

CHAPTER VIII.

POPOCATAPETL.

It was very seldom that John took Benny with him when he went to work at Ebenezer's, thinking that it might be inconvenient to Ebenezer to have so small a boy in his shop. He however took him there two or three times, and Benny always liked very much to go, though he was obliged to stand very still while he was there, and only look on to see John work. He was not allowed to touch anything whatever, except some blocks that Ebenezer gave him sometimes to play with on the floor.

One day, when John went to Ebenezer's shop, he saw that the fireplace was entirely full of fresh shavings which Ebenezer had made the day before.

"Ebenezer," said John, "may I set these shavings on fire?"

"No," said Ebenezer. "Not in the chimney. It would make too great a blaze.

And besides, it is too warm to-day to have a fire. The sun comes in so warm here this morning, that, if we had a fire too, especially such a great fire as that, we should be roasted out."

"Then what are you ever going to do with these shavings?" asked John.

"Thomas is coming here, by and by, to take them out beyond the gate and burn them on the snow."

Thomas was Ebenezer's little brother.

"What a good bonfire it will make," said John. "I wish Benny was here to see."

"Very well," said Ebenezer. "Benny is a good boy and does not touch my tools; so you may go and bring him, if you like. He can help carry out the shavings."

Accordingly, as soon as John had finished his sawing for that day, he ran home after Benny.

"Come, Benny," said he, eagerly, "we are going to have a great bonfire over at Ebenezer's, — a tremendous bonfire! Get your cap and your sled, and come with me."

Benny ran for his cap, and then, after

getting his sled too, he went with John back to Ebenezer's. They found Thomas there. He had been to mill, and had just returned. He had a large sled with a very capacious basket — that is, one that would hold a great deal — upon it, at the door, and he was just going to begin to put the shavings into the basket.

So all three of the boys went to work with great alacrity, in carrying out the shavings. They took them up in their arms, as many as they could clasp at a time, and jammed them down into the basket.

When the basket was full, they drew the sled away, — Thomas and John before, and Benny pushing behind, — and in that manner conveyed the load across the yard, and through a great open gate at one corner of it, to a wild sort of place, where nothing was to be seen but rocks and bushes, and ground covered with deep snow. The snow had been somewhat softened by the sun, but still, as the place was rather shady, it had not melted enough for the boys to sink in it much.

“Now,” said Thomas, “I’ll tell you

what we'll do. We'll build up a great pile of snow and make our bonfire on the top of it. That will make the blaze go up higher."

"No," said John. "Let us make a volcano. We will pile up our shavings on the top of these rocks, and then build all around them with snow, so as to make a mountain, and leave a little hole at the top for the fire to come out of. That will be just right, for volcanoes always have snow at the top, and rocks on the sides below."

This plan was agreed upon, and the boys proceeded at once to drag their load of shavings round by a circuitous route to the top of the rocks, where there was a small level area, tolerably free from snow.

Benny followed and tried to push, but the ascent was so steep that it was as much as he could do to get up himself. When they got to the place, however, he helped, as well as he could, in taking out the shavings, and piling them up in the place chosen. The boys made the pile very compact and solid, and as steep and high as possible.

They then went back for another load of

shavings, and then another and another. There were five loads in all. This of course made a great pile.

"Now," said Thomas, "I'll go and get a shovel."

"Yes, Thomas," said John; "get two."

"Then you must come with me to help bring them," said Thomas.

So the boys all went to the barn in search of shovels. They found three: one little one, which Thomas used to have when he was a little boy. They were all wooden shovels, of the kind used for shovelling paths in the snow.

With these shovels the boys began to build a wall all around the lower part of the pile of shavings, by means of great blocks of snow which they cut out of the deep drifts near. They made their wall quite regular at the beginning, but soon the snow began to come in broken and misshapen masses, and these they piled on in almost any way at last — anxious only to get the shavings all walled in. Besides, as John very justly remarked, the rocks and blocks of ice and snow in a mountain were not regularly laid.

At length the work was complete, the shavings being all walled in, except only that the top of the heap showed itself above the summit of the mountain.

Thomas then went into the house for matches to set the volcano on fire. They all wished to have a hand in setting the fire agoing, and so they dug three holes through the snow wall near the bottom till they reached the shavings within, and when all the holes were ready, they lighted the fire in all these holes at the same time.

The smoke began soon to appear, coming out at the top of the mountain. It came out denser and denser until at last the flames began to burst forth, and then the boys considered the eruption of the volcano at its height. They all took their stand below, near a seat that Thomas had once made there under the bushes, and viewed the burning with great joy and delight. You will find an engraving representing the scene, in the frontispiece.

John named their volcano *Popocatepetl*.*

* See Frontispiece.

CHAPTER IX. .

PLANNING.

JOHN was so much encouraged by the success of his apprenticeship to the art and mystery of sawing that he began to think more seriously than ever of his proposed bench, and he was quite desirous of finding some good place about the premises for setting up one.

He would have liked very much, a small room for a shop, all to himself. But there was no such room that he supposed could conveniently be spared; so he gave up that plan, and concluded instead to find a window in some corner of the out-buildings where he could build his bench, and then, in order to keep his tools safe when he was not using them, to lock them up in a chest.

"Do you think I could learn to make a chest," said he one day to Ebenezer, "that would do to lock up my tools in?"

"Yes," said Ebenezer, "you could make some sort of rough box, but a chest or box would not be so good for you. Some kind of cupboard, with shelves, and a door to lock up, would be better. Then you could see all your tools better, and take out any one without disturbing the rest."

"But I thought that carpenters commonly kept tools in a chest," said John.

"Yes," replied Ebenezer, "they do. But that is because they wish to carry them about from place to place wherever they are at work upon different buildings. But when you wish to work in one place all the time, shelves are much better.

"And if you are going to do anything like that," he added, "I advise you to buy your lumber now, before the snow is all gone, for now you can haul it home on your hand-sled. But after the snow is gone you would have to pay a cartman to do it, and you had better save that money to buy tools with."

Ebenezer moreover told John of a certain corner in a back room at his mother's house, which he thought would be a nice place for him to put up his bench in.

There was a window, opening toward the south, which would make it warm and pleasant for him to work there in many cold and blustering days in the spring, when it would not be pleasant out-of-doors.

This window was so near a corner that one end of the bench might be made to fit closely into the corner; and over that end of the bench, beyond the turn of the corner, would be a good place for the case of shelves.

"You can buy floor-boards at the steam-mill," said Ebenezer, "ready planed, and those will be good for the covering of your bench and also for your case of shelves. That will save you the trouble of planing the sides of the boards, which is very hard work. You will only have the edges to plane, which is comparatively easy."

"Well," said John, "I will do that. But I don't know how many boards to buy. I wish you would calculate for me;—if I could only pay you in some way for the time it takes you."

"You might pay me by turning the grindstone," said Ebenezer, — "only I have

not got any grinding to do just now. But, then, I can trust you. You was such a faithful apprentice that you have got your credit up."

So Ebenezer took a small piece of chalk from a shelf above his bench, and a smooth piece of board from beneath it, and began to make his calculations.

"I can give you a pencil and a piece of paper," said John.

"No," replied Ebenezer; "carpenters usually do their figuring with a piece of chalk and a board."

"Let us see," said he. "How far do you suppose it is from the window to the corner, where you are going to have your bench?"

"I don't know," said John. "About so far," reaching out his hands pretty far. "There are two barrels standing there."

"It must be about three feet," said Ebenezer, "and the window may be about three feet wide, and the bench ought to come about two feet beyond the window. We will say eight feet for the whole length, — and two feet six will be wide enough — say two feet ten, — that, with allowance

for waste, will take say twenty-four feet for the top."

So Ebenezer went on with his estimates, talking to himself and figuring. It is not necessary to follow him through all his calculations. It is sufficient to say that he estimated carefully the length and breadth of each part of the work which John was to do, and then multiplied them together to get the square feet of lumber that each would require, making a liberal allowance for waste. After ascertaining the whole amount, he told John he would want about seventy-five feet of planed boards for his bench and his cupboard, and twelve feet scantling.

"The scantling is for the legs of the bench," said he.

"I am afraid I shall forget," said John.

"Then I'll give you a memorandum on a smaller board," said Ebenezer.

"But I am afraid the chalk will get rubbed out," said John.

"Then I'll write it with a pencil — a carpenter's pencil."

A carpenter's pencil being made for ruling — for sometimes carpenters use pencils

instead of marking-awls, as for example when they wish to make plans or drawings of their work, or of parts of it, on a smooth board — is different in form from a drawing or writing pencil, being flat instead of round, and having a very strong thick lead, which will not easily break. Ebenezer, with his carpenter's pencil, made a memorandum upon a small smooth block, three or four inches long.

"There," said he, "that's the lumber you'll want for your bench and cupboard. It will cost two or three dollars. Your mother can do just as she pleases about giving you the money ; but I can tell you one thing, and that is, that, unless you have more steadiness, patience, and perseverance than most boys have, it will be money thrown away."

"I mean to do the best I can," said John.

"I'll give you four rules," said Ebenezer, "and I advise you to write them down handsomely on a piece of paper, and make an ornamental border around them, and put them up in your shop where they'll be always in sight."

"Well," said John, "give us the rules."

So Ebenezer gave the rules thus : —

"Never nail without boring.

"Never saw without marking.

"Never mark without measuring.

"And never attempt to do anything with an unsuitable tool, or with a dull one.

"When boys attempt carpentry work," continued Ebenezer, "they almost always break down in one of those four ways. They try to nail without boring, and split the wood. They saw without marking, and saw crooked, and so the piece does not fit. They mark without measuring, and mark wrong. And they try to work with a dull tool, or one not intended for that kind of work, and so either break the tool or spoil their job."

"But sometimes my tools will be dull, or I shall not have one of exactly the right kind," said John.

"Then leave your work and go and do some other kind of mischief, if you must do some mischief or other. Mischief with

carpenter's tools is the very worst kind you can do."

John took his memorandum and went home, and reported to his mother the result of Ebenezer's calculations. He said that he had partly enough money to buy the lumber already, and that he was going to save all he could, until the money was made up.

But his mother told him that she was willing herself to furnish the lumber for the bench and cupboard.

"Indeed," said she, "it seems to be right and proper that I should, as they will both be fixtures, and when you have done with them they will be left there, and will be very convenient for some of my household purposes, — that is, if you make them well."

"But, mother," said John, "I don't expect to be done with them at all. I expect to go on using them all the time."

"True," said his mother, "until you grow up or go away to school or to college. But this house will last probably a hundred years, and your bench and cupboard, if you make them well, may remain per-

haps all that time, and whoever lives here then will have the benefit of them. Whenever the house is sold, your bench and cupboard will add to the value of it, and so, you see, it is right that the owner of the house should pay part of the expense.

"So we will divide the business in this way," continued Mrs. Gay. "I will pay for the lumber, and you shall do the work. Then the bench and the cupboard shall belong to you as long as you remain to occupy and use them; and then, when you have entirely done with them, they belong to the house."

John was well pleased with this arrangement, and he began to feel a new and stronger interest than ever in the work that he was about to undertake, from the fact that he was going to make something that might perhaps last a hundred years.

CHAPTER X.

BUYING LUMBER.

It was quite a question with John whether it would be best for him to take Benny with him or not, when he went to the steam-mill to buy his lumber.

“He might help me a good deal,” said he to himself, in thinking of the subject, “for he is strong enough to push pretty well, but then he will turn everything into play so. If there should be any hole or hollow in the way, he will want to haul the sled over it so as to make a jounce ; or else, if I don’t let him do that, he will leave off pushing, and try to jump on the boards to get a ride. I shall find the sled all at once going very hard, and when I look round to see what is the matter, I shall find Benny clinging on behind and making the ends of the boards drag on the ground. I wish I could have Lurely.”

Lurely was a boy who lived not a great

way from Mrs. Gay's house, and often came there to do light work.

The more John thought of the plan of getting Lurely to go with him and help him haul his lumber, the better he liked it. He would take Lurely, he thought, and not Benny. Lurely was accustomed to work, and could work steadily and to good advantage ; but Benny turned everything into play.

Finally, however, he concluded that he ought to take Benny, if it were only to occupy and amuse him — that being a part of his duty under the office which he held. So he concluded to let Benny go too.

He had some doubt whether his sled was large enough, or rather high enough to bring home such long boards. He could easily lengthen out the rope, he thought, so as to get *room* enough for the boards, but he was afraid that the sled was so low that the ends of them would hang down and drag upon the ground.

“ And then,” said he, explaining the difficulty to Benny, “ the wood will get covered with mud and sand, and that will dull my saw —

"When I get a saw," he added, for just then he recollected that he had not yet provided himself with any saws.

He however concluded to try the plan of hauling the load of lumber on his sled ; and in order to diminish the difficulty of the boards dragging in the mud, he determined to go and come to and from the village by a back road, where, especially upon the sides of it, there was plenty of snow, while in the main road the ground was almost bare.

The sun always melts away the snow much faster in the middle of the road than at the sides of it and in the fields, on account of the absorption of his rays by the dark-colored substances which abound there, and also on account of the heat developed by the percussion and friction of the horses' hoofs, and of the runners of sleighs and the tires of wheels.

Any boy who is curious about such things can prove the efficacy of both these causes. You can sprinkle ashes, or the shreds of black cloth, or any other dark-colored substances upon a path where the snow is white and clean, and then, after

leaving it for the sun to shine upon it a few days, you will find that the snow will be melted much more under and around the dark-colored substances than where the snow was left white and pure.

You will also find that any kind of rubbing or pounding of wood or iron or stone, will warm and finally heat it. I presume, although I never tried the experiment, that if you were to put a little snow in a mortar and leave it out all night, so that the mortar and pestle might both become very cold, you could then in the morning melt the snow by pounding it in the mortar, even in the coldest weather.

But to return to John. He procured a long rope, to lengthen out his sled-rope with, and then he and Benny set out together to go to the house where Lurely lived, in order to get him to go with them after the lumber.

As it happened, Lurely was coming that very morning to Mrs. Gay's with his own sled, which was a larger one than John's, in order to get some ashes to haul home to his mother. He used to come quite often for this purpose, and he had a square box

which he put upon his sled, between the stakes, to bring the ashes in.

John proposed his plan to Lurely, and Lurely seemed very willing to go with him and help him bring the lumber.

"And we had better take your sled too," said John, "for it is bigger, — if we can only get the box off."

"We can get the box off well enough," said Lurely, "but we had better leave it on, for it is so high it will keep the boards up better off the ground."

So they turned at once to go all together to the steam-mill.

John and Lurely took hold of the cord of Lurely's sled, and gave Benny the other to draw.

"Here, Benny," said John, "you can haul this sled, while Lurely and I haul the big one."

Benny took the cord of the smaller sled, and running behind the other he slipped it over the stakes, and then jumped on the sled to have a ride.

John, feeling at once the new retarding force, looked round, and seeing Benny, exclaimed, —

" Ah, Benny! you rogue. I knew it was some of your mischief. Get off! "

" Oh, no," said Lurely; " let the little fellow have a ride."

John consented, and so they went on drawing both the sleds, with Benny riding on the hindermost one, until they arrived at the mill.

The steam-mill, as they called it, was near the centre of the village. It was worked by a steam-engine, and was fitted up with a great variety of machinery, by means of which a great many different operations were performed of sawing, planing, and getting out stuff for sashes, doors, and other such work, which half a century ago the carpenters were obliged to do altogether by hand. As the boys approached the place, they heard a prodigious humming and whirring sound within.

They stopped when they got near the door, being both somewhat afraid to go in. Mr. Gear, the owner and manager of the mill, was quite a terror to all the boys around, as he never would allow any of them to come into his mill, or even to come near it if he could prevent them; and al-

ways made short work with them if any of them attempted it.

He must have seen John's party coming up to the door, for almost immediately after they stopped, he appeared at the door, looking very stern.

"Come, boys!" said he, speaking in a very prompt and authoritative manner, — "move along, move along, — unless you have come here with your sleds after a load of lumber."

"That's just it," said John; "we *have* come for a load of lumber. Here is the memorandum."

So saying, John handed to Mr. Gear the block which Ebenezer had given him.

Mr. Gear took it and looked at it attentively a moment, and then said, —

"Well — this looks business-like. Have you got any money to pay? I don't sell lumber to boys on credit. What boy are you?"

"I am John Gay," said John.

"Oh! — Mrs. Gay's boy! That's different. Come in."

So the boys all went in. Benny gazed around with amazement at the various

wheels, and long leather bands, and saws, and machines of all kinds that were whirling and spinning in all parts of the room. Workmen were going to and fro, bringing in and taking out work, and there were great piles of chips and shavings lying here and there, and so much noise withal that it was almost impossible to hear a word.

"There, boys," said Mr. Gear, pointing to a safe place on the floor, "stand there, and don't move a step till I get this lumber out. Don't go near any of my machines. A boy can't go near a machine and see wheels agoing without wanting at once to poke his fingers in among them. I had a boy come here once, and he heard some sort of noise in one of my machines that he thought was curious, and so the booby put his ear close down to hear, and a wheel that was whirling round so fast that he could not see it took his ear right off close to his head."

So saying, Mr. Gear walked briskly away.

"I know that fellow," said John. "His name is *Bill* Booby."

The boys thought that if they were not allowed to walk about and examine the machines, for fear of having their ears or their fingers taken off, there could at any rate be no objection to their looking at them from where they stood; but they found that there was such a maze of wheels, pulleys, belts, and drums whirling in all directions, that there was very little that they could understand. There was, however, one thing pretty near them that seemed tolerably intelligible. It was a sort of table, made very large and strong, and having a thin steel wheel, with teeth around the margin of it, rising up in the centre, a part of the wheel being above this table and the other part concealed from view below.

“That must be the circular saw,” said John.

The boys soon observed a man bringing out some boards and laying them down upon the floor by themselves. John thought that these boards might perhaps be for him, only they were so long that he thought it would not be possible for him to get them home on the sled. Mr. Gear seemed to think so too, for on coming presently to the

place and looking at the boards and then at John, he said, —

“Do you expect to get these boards home on those sleds?”

“That is all we have got to take them home on,” said John.

“It will be a very bad job,” said Mr. Gear, speaking in a very impatient tone. “What are you going to do with the boards when you get them home?”

“Make a bench of them,” said John.

“And how long is your bench to be?” asked Mr. Gear.

“Eight feet,” said John.

“Then we can cut the boards in two,” said Mr. Gear. “They are long enough to make two lengths. Here, Thomas, cut these boards in two in the middle, and then help these boys to load them on their sleds.”

Thomas, who was a workman standing near, immediately took one of the boards, and carrying it to the circular saw, he laid it upon the table crosswise in front of the saw. He then measured the board with a two-foot rule, to find the middle, and when he had found it, he brought the middle

point up in front of the edge of the saw. Then, by means of a handle on one side of the table, he slipped a band from one pulley to another, and this set the saw in motion with such prodigious velocity that the teeth immediately disappeared, leaving nothing to be seen but a dim and hazy appearance about the edge. He then pressed the board forward against the saw, and the saw, with a loud whizzing sound and a great flying of sawdust, ran through it and cut it in two almost in an instant.

He then brought the other boards to the place, one after another, and the saw cut them all in two as fast as Thomas could put them on the table.

“ Ah,” said John, “ if I could only saw as fast as that, I would soon get my bench and cupboard done.”

As soon as the boards were all sawed, and John had paid for them, Thomas took them all out and laid them upon the top of the box on Lurely's sled, and the pieces of scantling upon the top of them, and the boys hauled them home.

CHAPTER XI.

CARPENTER'S BENCH.

EBENEZER had given John very particular directions how to proceed in making his bench. I shall not, however, attempt to repeat these directions in the words which Ebenezer used, but the reader will understand what these were, by seeing what John did in carrying them into effect.

The first thing to be provided was a small, low bench, to serve as a saw-horse to saw his boards upon. A boy cannot saw to advantage without having a low bench, or something of that kind, to saw upon. It must be flat upon the top, so that the board will lie steadily upon it; and if the board is very long, it is necessary to have two.

And yet these benches or saw-horses are quite difficult to make, on account of its being necessary to have the legs *spread a*

little, toward the floor, to prevent the bench from continually toppling over. Now, to make legs and set them so that they will spread in this way, requires a knowledge of angles of inclination, and a degree of art and experience in working at an angle, that few boys possess.

So Ebenezer told John that he had better not attempt to make a sawing-bench, but to borrow Bridget's wash-bench, if she had one, and if she would lend it to him ; — for a wash-bench which is used to set tubs upon in washing was usually of just about the height, he said, that a boy would require for convenience in sawing.

A carpenter's bench bears some resemblance to a table, as it has four legs, and a plane surface above, supported by the legs at a height convenient for the purpose for which it is to be used. But it is curious to observe how things, that are essentially alike, come always to vary in certain details, according to the particular uses they are intended for. In a table, for example, the legs do not come quite even with the front of it, nor quite even with the ends. In other words, the upper surface projects on all sides, a little.

In a bench, on the other hand, the legs are always exactly even with the *front*, but they are at a considerable distance from the *ends*.

It follows from this, that, in a carpenter's bench, the upper surface does not project at all in front, while it projects a great deal at the two ends.

There are good reasons for this, which arise from the peculiar uses that a bench is to be put to, so different in some respects from those of a table. In the first place, the covering of the bench must not project in front on account of the solid work which has to be done, and the heavy blows which are to be struck, sometimes very close to the margin, so that the edge of the board forming the top would be very likely to split off if it were not well supported. And if it were not to split off, it would yield and spring more or less, under the blows of the hammer given to the work resting upon it; and the workman needs something very solid for his work to rest upon, when he is driving nails, or cutting with a chisel and mallet, or performing any other similar operations.

So important is this that cabinet-makers not only bring the front support of their bench close to the outer edge of it, but they make the top of very thick and heavy plank, and that of the hardest and most solid wood that they can procure. The plank is sometimes six or eight inches thick. Such benches as these, though much better for nice work, are very costly; and Ebenezer knew very well that John could not afford one, and so he said nothing about having a plank for the top of the bench,—and only explained to him how to make it so as to bring the two sides exactly under the outer edges of the top.

But though the bench along the sides must not project at all over the legs, and over the side-board which is nailed to them, the *ends* project a great deal,—that is to say, the legs, though placed flush with the *sides*, are drawn in, a *foot* or *more*, from the ends. There is a good reason for this, too, and it happens that the reason is the same for this as for the other peculiarity, namely, to give the bench greater solidity at the part where the carpenter does his principal work. Although he is obliged to

pound and hammer close to the *side* of his bench, he has no occasion to do it very near the *end*. So he brings the left front leg away from the end, *in* a foot or more towards the place where he usually stands at his work. This brings the solid support of the leg close under his hammering, and this deadens the spring of the wood very much.

You can see, if you choose, how important it is to deaden this spring by taking two nails exactly alike, and trying to drive one into a board that lies upon a heavy flat stone, like a door-step, and the other into the same board — which ought to be a pretty long one — when the two ends rest upon two chairs, and it is entirely unsupported in the middle. The nail will enter very easily when the board is on the stone, while it will be very difficult to make it go in at all when the board is placed in such a manner that it *springs* under the blows.

A very little difference in the yielding of the support on which the board rests will make a great difference in the facility with which the nail may be driven in. If you

put one board first on a table or on the ground, and then upon a thick plank, or upon a large flat stone, you will see at once that a nail can be driven into it much more easily in the latter case than in the other.

So, you see, it is very necessary that a bench upon which any pounding work is to be done, should be made as solid and substantial as possible; and if you have not a thick plank to put on at the top, you must, at least bring the front legs close to the front side, and also away from the ends, some distance, so that they may come more directly under the place where you are going to do your heavy work.

Ebenezer explained all this to John, and showed him how he must put his bench together in accordance with these principles.

"How long will it take me to get my bench finished?" asked John, when talking with Ebenezer on the subject.

"Ah," said Ebenezer, "there's the trouble. Before a boy begins a job of work, his first question is, how soon shall I get it done; and he is so impatient to see it finished, that he hurries on and spoils it. I advise you not to think at all about getting

it done, but only of the *doing* of it. Your first work is to saw out boards enough, eight feet long, to cover the top and to make two pieces to go along the sides, — one for the front and the other for the back.

“To choose boards for this, and measure out the lengths exactly, and mark the ends square, and saw them off straight and true, and then pile them up neatly by themselves in a pile, with the ends all exactly together, — is enough for one day's work. Do that day's work by itself. Do it as well as you can, and think only of that. It won't be time for you to think anything about getting your bench *done*, for a week or fortnight yet.”

In obedience to these directions John determined to saw off a number of boards eight feet long, for the top and sides of his bench, for his first day's work, and not to think of anything beyond that.

With the money that he had laid up from his salary he had bought one saw, of the kind for sawing crosswise. Ebenezer told him that he would have very little lengthwise sawing to do at first, and that little he could do very well, though not so fast,

with the cross-cutting saw. So he had better buy only one at a time.

"But what shall I do for a square?" asked John.

"True," said Ebenezer, "you must have some sort of a square. — I'll make you one."

So saying, Ebenezer pulled out from under his bench a piece of short wide board, and from this, after marking the corners carefully with his own square, he cut out a piece about a foot wide and fifteen inches long. He smoothed the edges all around with his smoothing-plane, and then examined the angles anew, with his own square, so as to satisfy himself that they were perfectly true.

"There!" said he, "that will do for you till you get far enough along to have an iron square. It is not convenient to use, but that's no matter."

"But, Ebenezer," said John, "one of your rules was that I must not try to do anything without a suitable tool."

"This square is a *suitable* tool," said Ebenezer. "I only said it was not a *convenient* one. If you had a great deal of work to do, you would get along with a regular

carpenter's square much faster, — but with care, and taking a little more time, you can do the work just as well with this, and so it is perfectly suitable. An unsuitable tool is one that won't do the work well, or is likely to lead to some mischief, — as when you try to bore a hole with a penknife, and break your knife, — or to drive a nail with a stone, and so bruise and spoil your work. Never attempt to work in that way, — unless indeed you are in an extreme urgency."

"What is an extreme urgency?" asked John.

"Why — a tight place of any kind. If you break down your wagon on the road, for instance, and have no hammer, and can't get one, you must drive your nails, to mend up with, as well as you can, with a stone. But don't do any such work as that at your leisure in your shop. Always have suitable tools; — though if at first you don't have the most *convenient* ones, that's no matter."

It was in accordance with these instructions that John commenced this first day's work on his bench, on the afternoon of the very day that he hauled down the lumber from the steam-mill.

CHAPTER XII.

MAKING A BENCH.

BENNY, as John said, always turned his work into play, and at first John thought that he would rather have him out of the way while he was sawing out his boards. But reflecting that it was his duty to take care of him and help to amuse him, and knowing very well that Benny would be quite desirous of being with him to see what was going on, he concluded to let him come.

“And I will try to beat him on his own ground,” said John to himself. “He will try to turn my work to his play, and I will see if I can’t turn his play into my work.”

So he called to Benny and said,—

“Benny, I am going to be a carpenter this afternoon. How would you like to be my apprentice?”

“I don’t know,” said Benny, looking somewhat uncertain.

"And your name shall be Jack."

"Well," said Benny, — his countenance brightening up at once at the idea of being named Jack.

"And shall you pay me?" asked Benny.

"No," said John. "They never pay apprentices, but only give them their breakfast, dinner, and supper every day, and teach them a little how to work."

"Well," said Benny, "give me my breakfast then before I begin."

"No," said John. "It is not quite breakfast-time yet, Jack. We have got to carry this bench out into the shop first. You take hold of one end, Jack, and I'll take hold of the other."

So John took hold himself of the forward end of the bench which Bridget had lent him, because it was easier for him to reach his arms round behind him to take hold of it than it would have been for Benny. In this manner they walked along.

When they had taken the bench to the corner where John was going to have his shop, they put it down, and then John said, —

"Now, Jack, you are to stay here and

take care of the shop while I go to market and get some provisions."

So John went into the house and asked his mother if she would give him a cake and a few lumps of sugar. He said they were for provisions for his apprentice Jack.

Mrs. Gay understood this at once, and went into a closet and presently returned with a round flat cake and several small lumps of sugar, all upon a small plate. John took these provisions, and wrapped them up in a paper, having first broken off a small piece of the cake, and wrapped it up, together with a small lump of sugar, in a separate piece of paper.

Then he went back toward his shop-corner, as he called it. On his way, he stopped at a door which opened out into the yard very near the place, and put the paper which contained the small piece of cake and the little lump of sugar down upon the step. Then he went on, and when he reached the place where Benny was sitting he said,—

"Now, Jack, you have been a very good boy to stay here and take care of my shop while I have been to market, instead of

running off to play, as lazy and bad apprentices do. Now go out to the steps and get your breakfast. You will find it there wrapped up in a piece of paper. When you have eaten your breakfast, then come back and help me overhaul this pile of boards."

Of course it did not take Benny long to eat his breakfast, but the pleasure which it seemed to give him appeared to bear no proportion to the quantity which he had to eat, for he came back capering about with delight.

"Now, Jack," said John, "look lively, and help me overhaul these boards."

So Benny, going to one end of the pile of boards, while John remained at the other, the two boys together lifted off one after another of them, to enable John to select and take out such as he thought best for his bench. He required two of about a foot wide each, for the front and back of the bench, and then enough others to make a width of two feet ten or three feet, for the top. He laid aside three boards, nearly a foot wide each — the best and smoothest that he could find — for the top, and also

a nice one for the front. For the back-side board he set apart one which was not so nice, as that side, being intended to go back against the wall, would be always out of sight.

John then went to work to measure, mark, and saw his first board, and then when that was ready he used it for a measure to get the exact length of the rest. His apprentice helped him in moving the boards, by lifting them at one end while John lifted at the other. In the intervals Benny amused himself in building houses with the blocks and short pieces of board which John sawed off from the ends of the long ones.

Now and then, too, John would slip away and put a small piece of cake and a little lump of sugar upon the steps, and then send his apprentice there for his dinner or his supper.

Thus John's work went on very prosperously, and yet Benny was amused and occupied all the time, and was ready to help John whenever his help was required, —and all through John's ingenuity in falling in a little with Benny's desire to turn work into play.

John succeeded in sawing out five boards that day, three for the top and one for each of the sides, and then, according to Ebenezer's advise, he determined to put his work away. So he piled up his five boards neatly in a pile by themselves, fitting the ends together exactly so as to make it appear how precisely they were of the same length. He put the rest of the boards in another pile, with the scantling upon the top of them, and then carried his saw in and put it away.

The following day, when John went to his work, he told his apprentice that the next thing he had to do was to saw out the legs for his bench. These legs were to be made of the *scantling*, as the carpenters call it, — that is, pieces of joist of the right size to make stiff and solid legs. The legs of a table must be comparatively light and slender, for a table must be made so that it can be easily moved about, and there is besides no necessity for its being made very specially substantial and solid. It is different with a bench in both these respects. It is never intended to be moved from place to place, and it must be very firm and solid for the work that is to be

done upon it; and so the legs are made of scantling or joists.

The size of the scantling which Ebenezer had marked in his memorandum for John's bench was three inches by four. John bought the pieces, too, already planed, so that he had nothing to do but to saw them to the proper length.

He first sawed off one end of one of the pieces of scantling exactly square, by marking it with his square on all the four sides, and then carefully following the lines in his sawing. Then he measured the proper length, which was three feet nine inches, and marked and sawed again.

Then, taking this leg as a measure, he marked off the other three legs, and after carefully squaring the lines upon these, where he was going to saw, he cut them off in the same way.

"Now, Jack," said John, "we must nail on the two side-boards to these legs, one side-board to each pair of legs."

So he proceeded to lay down two of the legs upon the floor, placing them exactly six feet apart, from outside to outside. For Ebenezer had told him that each leg must

be *set in* about a foot from the end of the bench, and this, as the bench was to be eight feet long, would bring the legs six feet apart.

Then he laid one of the side-boards along from one of the legs to the other, placing the upper edge of it exactly even with the upper ends of the legs. When he had placed the board in this position he began to bore a hole in each board, at the place where it rested upon the leg beneath it.

He was intending to bore three holes in each board: one at the upper edge, one at the lower, and one in the middle. He bored the middle hole first, and when he found that the point of the gimlet had gone nearly through the board, he stopped and measured again, to see if the legs were still six feet apart. When he had adjusted them exactly at the distance, he drove the nails home.

The object of boring in such a case as this is, not to prevent the nail from splitting the wood, for a nail in the middle of a wide board could not split it, but to assist in guiding the nails right, so that they may go in straight.

"Now, Jack," said John, "I must set my board exactly square with the legs before I drive the other nails."

"But you have nailed it already," said Benny, "and you can't alter it now."

"I have only put in one nail yet," said John, "in each board, and so I can move the leg one way or another until I get it exactly square."

John adjusted the legs in this manner by means of his wooden square, and then put in the other four nails. In the same manner he made the other side of his bench, and when both were finished he leaned them up against the wall, where they would be safe and out of the way, and then, piling up the remainder of his boards in a neat pile, he left his work for that day well satisfied with the progress that he had made.

The next thing to be done when he came to his work again, was to cut out the end-pieces to his bench; and in order to get the length of these end-pieces, he had to select the three boards which were to form the top of his bench, and lay them down upon the floor and measure the united breadth

of them. Then he had to take two inches off from this breadth, for the thickness of the side-boards ; for the side-boards projecting one foot each way beyond the legs, the end-boards must of course go inside of them. In other words, the top boards must not only make width enough to cover the length of the end-boards, but also to cover the edges of the side-boards which came outside of them.

I do not know whether all the readers of this book will be able to understand this very well. They certainly will not unless they have followed closely the whole account that I have given of the manner in which John went to work to make his bench. Indeed, I need not have been so particular in giving all these details, were it not that many boys will perhaps wish to fit themselves up a shop in this way, and they will like to know exactly how to proceed, especially as will often be the case they may have no Ebenezer to go to for advice and information.

When John had sawed out his end-pieces, he nailed them on in their places, Benny holding up the side-pieces one after

the other while he nailed. Then the frame of his bench was complete, and it would stand firm of itself, on the floor; and he had been so particular in measuring and marking everything, that it looked perfectly square in every part, and not a single board had been split, in driving the nails.

The next day that John came to his work he put the covering-boards on, and then set the bench up in its place, and sent Benny in to ask his mother to come out to see it. She was very much pleased to see how successful John had been, not so much for the sake of the value of the bench, though it was really a very good one, she thought, but on account of the habits of patience, perseverance, and system, which the doing of such work by such a boy tends so strongly to cultivate and strengthen.

"I think you have made a very good bench indeed," said she. "I am very much pleased with it."

"*Benny* and I," said John. "Benny has been my apprentice, and he helped me a great deal. I don't know what I should have done, if I had not had such a good apprentice."

CHAPTER XIII.

A SURPRISE.

It happened, very fortunately for John, that no *planing*, but only sawing and nailing, was required in making his bench ; for at this time he had not learned to plane, but he intended to go and serve his apprenticeship to that trade, as he called it, before he began his cupboard or case of shelves, for in that work some planing he knew would be necessary.

He explained to his mother, when she came to see his bench, what his plan was about his case of shelves. He was going to have it in the corner, he said, opposite the end of his bench, and he explained to her how many shelves he was going to have, and what tools he was going to buy when he had accumulated enough money.

"Only," said he, "I don't know exactly what to call the place. It is not a cupboard, for that is to keep dishes in, and this is for tools."

"You might call it a tool-case, or closet," said his mother, — "or, as you mean it only to put your tools in, for the purpose of locking them up when you go away, you might call it your lockup."

"That's exactly the name," said John. "I will call it my lockup."

"I am going to be Ebenezer's apprentice next week," he added, "to learn to plane, and then I am going to begin at once on my lockup. I don't mean to buy many tools, until I have got my lockup finished, and a good lock and key on it."

According to the plan which John thus announced to his mother, he went to work at Ebenezer's, all the leisure time that he had that week, and learned to use a plane, especially a fore-plane, pretty well. Some account of the lessons which Ebenezer taught him in this art will be given in the next chapter. He finished his apprenticeship on Friday, and he was intending on Saturday to begin upon his lockup, but his mother told him that she had a plan for him and Benny to go away with her, that day, on a long excursion.

John felt at first somewhat disappointed

at hearing of this plan, as he was quite eager now to finish his shop, but he knew that it would not be right for him to make any objection to his mother's wish, and, besides, he liked long excursions — no matter in what direction or with what object they were taken.

John inquired of his mother however, that evening at supper, what the excursion was to be the next day, and she told him that she was going to a town about ten miles off, where there was a nursery of trees and shrubbery, in order to purchase some plants for her borders and grounds.

“Is Wilmot going with us,” asked John, — “to bring the plants home?”

Wilmot was a hired man who worked at Mrs. Gay's, and whose chief employment was to take care of the horses and cow, and also of the gardens and grounds. He was quite an elderly man, and very quiet in his habits, attending steadily to his work, obeying Mrs. Gay's instructions most implicitly in all things, and scarcely ever speaking except to answer questions. He had been in Mrs. Gay's service many years, though he lived all the time in a

small house of his own with his wife, at a short distance from Mrs. Gay's. If he had any children, they had grown up and gone away.

That evening, just as the family were sitting down to supper, Mrs. Gay asked John to go out into the garden and tell Wilmot that she wished to see him before he went home. John went out, but soon came in again, and reported to his mother that he had delivered the message.

"But, mother," said he, "I saw Alonzo out in the yard. Did you send for him to do any work?"

Alonzo was a young man who worked at the joiner's trade, and who often came to Mrs. Gay's to do some jobs.

"Yes," said Mrs. Gay; "I wanted to see him about altering a shelf in my china-closet, and about some other things; but I thought he had gone home."

"I think *I* can do such things for you, by and by," said John, "when I get my shop done, and my tools all bought."

"Yes," said his mother; "I am depending upon that."

Just as the family were rising from the table after supper, Wilmot came in.

"Ah, Wilmot," said Mrs. Gay, "I wanted to see you a moment before you went home. Take a seat."

Wilmot sat down in a chair near the door.

"I am going away to-morrow in the carry-all, and I shall wish to have you go with me in the wagon. Can you leave your work to-morrow?"

"Yes, ma'am," said Wilmot.

"I shall be gone nearly all day, so you can tell your wife that you will not be at home at noon for dinner."

"Yes, ma'am, I will," said Wilmot.

"You may come to the door to-morrow morning with the carry-all and horses, and also with the wagon at nine o'clock."

"Yes, ma'am." Then observing that Mrs. Gay said no more, he rose, bowed, and went away.

The next morning at the appointed hour he came to the door with the carry-all and the wagon. John, who had gone out to the barn to help about the harnessing, drove the carry-all, and he himself drove the wagon. Mrs. Gay, who was all ready, and Benny, got into the carry-all. She

herself took the back seat, and Benny got upon the front seat with John. Wilmot assisted her in, and shut the door, and saw that everything was right about the harness, and that the reins were safe in John's hands, and then, when John set off, he got into the wagon behind and followed.

"Now," said Mrs. Gay, "drive first to your cousin Mary's house, for she is going too."

So John turned the horses' heads to go to his cousin Mary's, which was in the direction toward the town. After going on a little way, John saw some one coming toward them, wheeling a wheelbarrow with the ends of boards projecting from the side of it. Presently he perceived that it was Alonzo.

"Ah, mother," said John, "here is Alonzo coming to make your shelf."

As Alonzo passed, John perceived that he had a number of pieces of board upon his wheelbarrow, all looking new and freshly planed, and of different sizes, as if intended for some complicated work. There was a large box, with many tools in it, on the top.

"No," said John, "it must be for some other job. I only wish, Benny, that you and I had all the tools he has got in that box — and knew how to use them all."

The carry-all drove on, and the children had a charming ride. It was now the last of April, and the roads in most places had become dry and settled. The grass, too, was beginning to look green, and the trees appeared as if the buds were swelling. The children observed too that the willow-trees here and there were pushing out their "pussies." Notwithstanding these signs of spring, however, there were still large patches of snow to be seen here and there, — the remains of the deep drifts which the wind had heaped up during the great storms of the winter, while John and Benny had been at work in the back hall.

At length they arrived at the town where the nursery was. John drove, by his mother's directions, directly to the tavern. It was a small tavern, but a very neat and pretty one, with gardens and sunny yards around it. There was a side-door which opened into a large but neat and pretty yard, with a stable in the rear of it, — and

sheds and out-buildings going from the house to the barn, and a garden on the opposite side.

Under the window near the door where the carry-all stopped was a flower-border, and at the time that Mrs. Gay's party arrived, a nice and happy-looking girl was at work with a garden-trowel, digging around the roots of her plants which were just beginning to appear above the ground.

She left her work and came to open the carriage-door and assist Mrs. Gay to alight. Wilmot came, too; and Mrs. Gay and the children were soon conducted into the house and ushered into a pretty little back-room, where there were the remains of a fire, and a wood-box near, covered with paper like that of the room, and filled with carpenter's chips and small pieces of board and sticks of wood for making a quick fire.

"Ah!" said Benny, "here is some kindling-wood for us. Let us make a fire."

So the children put on some shavings and sticks, and soon made a bright blaze which it was very agreeable both to see and to feel; for out of the sun the air was

still a little cool. Mrs. Gay ordered dinner, and Olinda, for that they found was the name of the girl that they had seen at the door, began to set the table.

While she was doing this, the children, having made themselves thoroughly warm, went out to ramble about the yards and sheds, to see the poultry, and the animals in the barn. At length the bell rang, and they all came in to dinner. The dinner consisted of hot rolls, very light and nice, and fresh butter and maple-syrup to put on them. There was nice coffee too, and milk, and some fried chicken, and, at the end, some doughnuts and a warm mince-pie.

After dinner the whole party went to the nursery, where Mrs. Gay spent an hour in choosing and purchasing plants and shrubbery. The children spent most of the time in running about the broad walks and observing the operations of the various gardeners. Mrs. Gay allowed the children, however, to choose four flower roots or shrubs, apiece, for themselves.

After selecting and paying for the plants and flowers, the party all returned to the tavern. When they arrived there, Mrs.

Gay gave Wilmot directions to bring out the horses.

"We will set out on our return, and go on slowly," said she; "and you may take the wagon and go to the nursery and get the plants and flowers. They will be all packed and ready, I suppose, by the time you arrive there. If not, you can wait for them, and then when you have got your load you can come on after us."

Wilmot simply said, "Very well, ma'am," and in a short time afterward the carriage came to the door, and the party soon set out on their return home. They arrived about five o'clock. John and Benny went first to the barn to see the horses unharnessed and put into their stalls, and then helped Wilmot to draw the wagon, with all the plants and shrubs still in it, under an open shed, where the roots were all to remain undisturbed until the following day.

"And now," said John to Benny, "let us go and see how our bench looks."

So they ran into one of the back-doors that opened near the carriage-house, and after traversing one or two open rooms and passage-ways they came to the shop-corner,

and were both at once overwhelmed with astonishment to perceive that a sudden and most extensive transformation had taken place there, as if by magic. Instead of the simple bench, bare and naked, which they had left there in the morning, they now found what appeared to be a full and well-furnished shop, with all the tools and appliances complete. There was a vice attached to the front of the bench, and a block fitted in the proper place to plane against. There was a row of tools in a rack across the window, and others hanging on the wall. The lockup, too, had been made, and there were a number of tools on the shelves of it.

John and Benny were both so utterly astonished at this spectacle that they stood for a moment as it were transfixed, and seemed not to know what to say or do. At length John began to look at the tools, one after another, but he did not touch any of them. There were three saws hanging up, over the bench, — and two squares, of different sizes, and three planes upon the bench, in front of the window, and a gauge and a hammer. At the farther end of the



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bench, too, near the lockup, was a small grindstone, while at the nearest end, in a sort of recess underneath, where the sideboards and top projected beyond the legs, was an oil-stone and a small tin can for containing the oil. Besides these there were various other things which cannot be here particularly described.

As soon as John and Benny had in some degree gratified their curiosity, John said,

"I know, Benny, it is all mother's doings. It can't be anybody else. Let us go in and tell her about it."

So the boys both ran in to find their mother.

"Mother," said John, "how *did* my shop all get made so soon. But is it my shop, at any rate?"

"Yes," said his mother, "it is your shop. I was rather backward about spending money to buy you a chest of tools before you knew anything about using them, and even before I knew whether you would have patience, perseverance, and manliness enough to learn. But your making the bench as you did, so slowly and carefully, settled both those points. All those tools

are yours. I am sure you will not abuse them. They are not all that you will want, but they will do for you to begin with, and you will gain money enough by your salary, if you continue to take as good care of Benny as you have done, to buy more, from time to time, as you find you want more.

CHAPTER XIV.

PLANES AND PLANING.

If any boy who reads this book has a plane, or if he has access to one that he can have the opportunity to examine, he will find that it is a very curious instrument.

It consists of a pretty solid and substantial block of wood, with an opening cut through the middle of it for the blade which is to do the cutting to pass through. This blade is called the plane-iron. It is in fact made chiefly of iron, though a portion of it at the edge, enough to form the cutting part, is of steel.

The lower edge of the plane-iron is set so as to project a little way below the bottom of the plane, and it is kept firmly in its place by a peculiar shaped wedge which is to be driven in tight after the iron is properly placed, when the plane is to be used.

The opening through which the plane-iron passes down through the plane is very narrow at the under side, being only made wide enough for the shaving that is cut to come in. It widens afterward toward the top, in order that all the shavings that do come in from below may come up without any difficulty, and be thrown out at the top.

In order that the wedge may not be in the way, and prevent the shavings from coming up freely, the middle of it is cut out, leaving only the two sides — which form a kind of fork — to run down and bind the iron in its place. If you take out one of these wedges and examine it, you will find it to be shaped in a very curious manner, and by putting it carefully back in its place, you will see the reason for all the peculiarities of the form of it, which is to make it hold the plane-iron tight by the two sides, while yet it allows the shavings to come up freely by it in the middle.

He must have been a very ingenious man who contrived it, — and yet, notwithstanding the ingenuity of the arrangements, they do not always perfectly succeed, for when the wood is wet, or partly decayed,

or the tool is dull, or the workman unskilful, the shavings often do not run clear, but clog up the passage and stop the work entirely, so as to compel the workman, before he can go on, to knock the iron out, clear the jam of shavings away, and then put the iron in again.

The sharp edge of the plane-iron protrudes a little way from the lower side of the wooden stock in which it is set, the protrusion being just equal to the thickness of the shaving which it is intended to cut. The first thing that you have to learn therefore in managing a plane, is how to "set it," that is, how far to make the edge protrude. This will vary a great deal according to the work that is to be done.

If the wood is soft, and the piece is narrow, — as for example when you are planing the edge of a pine board, — you can take off quite a thick shaving at every stroke; and in this case the iron may be set so as to protrude a good deal. On the other hand, if the wood is hard, or if the surface which you are planing is broad, so that at every stroke you cut a shaving of the whole breadth of the edge, then you can

only take off a thin shaving at every stroke, and so the edge must be made to protrude but very little, — so little, that, when you take sight along the under surface of the plane, you see only a very slender dark line, fine almost as a hair, where the edge comes through.

It requires a correct eye and a nice habit of observation to perceive the slight differences in the setting of the plane-iron required for the different kinds of work; but until a boy has acquired this skill, he cannot do anything with a plane unless he has somebody at hand to adjust it for him properly.

Accordingly, the first thing that Ebenezer did when John came to serve his apprenticeship in planing, was to teach him how to set the plane. He gave him some palings to plane, both at the sides and on the edges, and he required him to do the sides and edges alternately, and to alter the setting of the iron every time he changed from a side to an edge.

A plane, too, he told him, must be set much lighter — that is, the edge must protrude less — when it is to be used by a boy

than by a man, inasmuch as a boy has not strength enough to cut so thick a shaving.

Ebenezer taught John also to hold his plane perfectly even and true, without canting it to one side or the other, and also to keep it perfectly level, both when it comes upon the board at the beginning of the stroke, and also when it leaves the board at the end of it, so as not to cut down any more at the ends than he did in the middle, as boys are very apt to do when they begin.

"How many kinds of planes are there, Ebenezer?" asked John.

"Oh, there is no limit to the number," replied Ebenezer. "There is an endless variety of them made for mouldings and groovings and all such things, but for common work *three* make a set."

"I don't see why you need three," said John.

"One for cutting down fast," said Ebenezer, "and one for straightening, and one for smoothing.

"The one for cutting down fast," continued Ebenezer, "as where you want to cut away the roughness of the sawed board.

or a jagged edge, is called a *fore* - plane, or a *jack*-plane. It is comparatively small and easily handled, and the edge of the blade is not straight but curved, so that it protrudes most in the middle, and thus it cuts out a shaving that is thick in the middle and thin at the two ends. Of course it leaves hollows, though very broad and shallow ones, in the wood that you plane.

"The next is a very long and heavy plane, and has a straight edge to the blade. This is to make the work level and straight from end to end. To do this it is made long, so that the ends, stretching far forward and back, keep the plane level and prevent its following any waving in the wood. It is much heavier to handle and less easy to use, but it takes off only a very thin shaving, and in the end makes the board perfectly straight and flat."

"And what is that smallest plane of all?" asked John.

"That is the smoothing-plane," said Ebenezer. "It takes off a *very thin shaving indeed*, so as to smooth the wood all over perfectly after the other planes have been used upon it. Then, if you wish to

make your work very nice indeed, you finish it at last by rubbing it with fine sand-paper wrapped over a block of wood.

“But of all these planes,” added Ebenezer, “the only one that *you* will have occasion to use for a long time will be the fore-plane.”

By the time that John had planed out the pieces for Ebenezer's gate he had learned to set and to use the fore-plane very well.

Ebenezer also taught him how to sharpen his plane on the oil-stone, when it was a little dull.

“As for grinding it, when it gets very dull, that you can't learn at present,” said Ebenezer. “It takes a man to grind a plane.”

CHAPTER XV.

THE GARDEN-SEAT.

ALL these things about planes and planing Ebenezer taught John during his apprenticeship at the planing trade ; so that when he saw the three planes which his mother had bought him, together with the other tools, upon his new bench, he felt in some measure prepared to use them. He held them up one after the other, and took sight along the bottom-surface of them, to see if they were set right.

“ What are you looking at ? ” asked Benny.

“ I am looking,” replied John, “ to see if my planes are all set right — ready to be used.”

“ And are they set right ? ” asked Benny.

“ Yes,” said John. “ And now the first thing I mean to make is a platform for me to stand upon at my work, — though I *could* work at this bench,” he added, “ as it is.”

As he said this, John stood by the side of his bench and made motions with his smoothing-plane, as if he was planing with it.

"I could plane with it as it is, though it is rather too high."

For you must understand that John, according to Ebenezer's advice, had made his bench of the ordinary height as used by men.

"For if you do so," said Ebenezer, "then as you grow older and taller the bench will be right for you, and it will be right too for other workmen whom you may have sometimes doing work there. Then for yourself, while you are small, you can have a platform to stand upon, that will raise you to the right height."

"So the first thing that I shall do," continued John, as he put the plane back in its place, "is to make me a platform to stand upon while I am at work."

"How are you going to make your platform?" asked Benny.

"You will see," said John.

John went to work the next day to make his platform. It was very soon done, as it

consisted only of a board about four feet long, with three supports nailed to the under side of it, which supports consisted of three narrow strips of wood set up edgewise. These strips were wide enough to raise John, when standing upon the platform, about six inches from the floor, and this he found brought him to just about the right height to work conveniently at the bench.

When Benny saw how the platform was going to work, he said that he wanted one too.

"Very well," said John, "I will make you one too."

So he made a second platform of the same height with the first, and about four feet long. It was very considerate in him to make both the platforms of the same height, for by that means, when occasion required, he could place them together, end to end, and so extend the range of his walk almost the whole length of the bench. This he found very convenient sometimes, when he had any long work to do — as for example when he had long boards to plane. At all other times Benny could have his

platform, and be at work at the farther end of the bench, while John was employed at *his* end.

While the boys were employed upon the work of making the platforms, Mary came out to see the new shop. She was extremely pleased with it.

"How *many* tools you have got!" said she. "Why, I should think you could make anything in the world with so many tools."

Mary made the same mistake that other children so often fall into in not being aware how much more requisite *skill* was than tools, in order to "make things."

"Could not you make me a rocking-horse?" she asked.

"Ah — no," said John, shaking his head somewhat sadly. "I might perhaps make the rockers, — but I never could make the horse."

"If it was only something that would rock," said Mary, "I should not care so much about its being a very nice horse. Could you make me a seat for my garden?"

"Yes," said John, "I think I could do that."

"Well, I want a seat very much," said Mary. "When I get tired of working, I want to sit down and rest, and I have no place to sit. Yesterday I tried to sit on my basket, but it bent down so much I was afraid it would break. Then I brought out a chair, but the legs sank down into the ground, and it almost tipped me over. Besides, I want something to put my papers of flower-seeds upon. I don't like to put them on the ground. Luly treads on them. She don't mind a bit where she treads."

John went to work at once as soon as the platforms were done, to make the seat. He first made a plan of it on a smooth board, with a pencil, as he had seen Ebenzer do in similar cases. Benny stood by, looking on while he drew his plan.

He had three things to consider, — the length and the breadth of the seat, and also its height from the ground.

As to the length, he thought it would be convenient to have room upon it for two persons to sit, — one at each end, — and have space in the middle for the papers of flower-seeds. This he calculated would require about four feet.

So he drew a line upon his smooth board to represent four feet in length. He allowed one inch to a foot, so that his line was exactly four inches long. He obtained this length by placing his iron square down flat upon the board, and marking the four inches from the long arm of it, and then drawing the line, using the edge of the square for a ruler. Then he marked off one inch on the short arm of the square, and drew the line there too, making a square corner. Then he shifted the square so as to bring the corner at the other end of the long line, and drew another line there, for the other end of the board; and finally drew another long line to connect the two ends of the short lines, for the other side, and his drawing of the top of his seat was complete.

To determine the height, he made Mary sit down in several different places, until he found what was the most convenient height for her, and then adding two or three inches to that,—for he hoped that his seat would last a number of years, and Mary was all the time growing,—he fixed upon the height which he thought would

be best for his seat, which he found on measuring it with his scale was about one foot.

He intended to make his end-pieces out of boards, with the lower corners cut off of each, in a sloping direction, so that the boards could be driven more easily into the ground. He concluded to set these pieces eight inches into the ground, and this required them to be twenty inches long in all.

So he proceeded to make a drawing of one of these end-pieces, with the corners cut off as much as he thought was best.

It is not really necessary to draw a plan in case of so simple a piece of work as this, but in all complicated undertakings it is very important to do so, in order to make everything come out right in the end; and John determined that in all his work in his shop, whether it was anything simple or difficult that he undertook, he would proceed in a careful, deliberate, and scientific manner.

After having drawn his plan, John set the board up before him on the bench, as he had seen Ebenezer do in similar cases,

and proceeded to "get out his stuff," as the carpenters say. He was contented to make the top-board the first day, and took another day for the two ends. When all three of the pieces were ready, he took them over to Mary's garden, and set up his seat in the place which Mary had chosen, by driving down the end-pieces eight inches into the ground, and then nailing the top board across from one to the other. He first made a place for the side-boards by crowding the spade down and wedging the ground open a little, and then he rammed down the earth tight about them, after they were driven.

It made a very good seat, and Mary was extremely pleased with it.

CHAPTER XVI

QUESTION OF THE MARTIN-HOUSE.

AMONG the various sources of trouble and difficulty which boys experience in attempting to work with tools, or to accomplish in any way substantial and permanent results, there is one thing which is perhaps a greater hindrance to their success than any other, and a greater cause of vexation, disappointment, and failure, — and that is their *impatience*. They are so excessively eager to get a thing finished when it is once begun, that they hurry the work, and so make mistakes, and meet with accidents, which not only greatly mar the pleasure which the slow but successful prosecution of the undertaking would afford them, but are often the cause of utter failure in the end.

One of the hardest lessons which John had to learn was to be patient, and not to hurry his work, but to be willing to go slowly if he could only go surely. He was

often very much disappointed in not being able to finish what he was making as soon as he expected, — though Ebenezer often told him that he ought never to set any time at all for finishing any work that he began, but to go on patiently and slowly, content if he advanced it a little every day, and leaving the time for it to be finished to come when it would, without attempting to hurry it, or anticipate it in any way.

John had formed a plan the winter before of setting up a martin-house, on a pole, in the yard of his mother's house; and the greatest trial of his patience, in respect to any of his works this spring, was in finishing this house in time to be occupied by the martins.

He had cut down a tall and slender tree from the woods, for a pole, in the winter, and with the help of Thomas, Ebenezer's brother, and Benny, had hauled it home, and laid it in the yard.

Thomas, Ebenezer's brother, who was with John and Benny when they cut down the pole, helped them a good deal. Indeed, without Thomas's help I think it very doubtful whether they could have accomplished so difficult a work.

The pole, or rather the tree from which the pole was made, grew on land belonging to Mr. Greenwood, Ebenezer's father, and John bought the privilege of cutting it from Ebenezer himself. He was to take any tree that he chose, provided it was not above a certain specified size that had been agreed upon.

He chose a tall and slender tree, and one which stood at the same time in such a place that he and Thomas thought they could pretty easily draw it out, to the open ground, when they had felled it.

After measuring the tree, and finding that it came within the limit that Ebenezer had allowed, John took the axe and began to cut it down. Thomas offered to cut it down for him, but John preferred to do the work himself.

"Then," said Thomas, "I mean to cut another one down for *me*."

"But you have got a martin-house already," said John.

"Yes," said Thomas; "but it won't do any harm to have two. You can't have too many martins flying about your house and yard."

John found no difficulty in cutting through the stem of his tree, so as to make it begin to fall, but he came upon a very unexpected difficulty which prevented its coming entirely to the ground. The top of it lodged among the branches of another tree, against which it fell.

"There!" exclaimed Benny, when he saw this result. "What are you going to do now?"

"I'll climb up into the tree where it is lodged," said Thomas, "and cut it away."

So Thomas immediately began to climb up into the tree in which the other was caught. It was not very difficult to climb it, for this tree grew near the margin of the wood, and had more and bigger branches near the ground.

When Thomas had got up some way, he called to the other boys to hand him up the axe.

"No — the saw," said John. "You can manage the saw better with one hand."

"The saw it is, then," said Thomas.

So John reached him up the saw, and with it Thomas sawed off such branches of the tree that he was on, as he perceived

were holding the other, and in this way John's tree was soon released, and came down to the ground.

They then trimmed up the stem, and hauled the pole home on their sleds. They meant to have peeled the bark off immediately, so as to have the pole all ready to be put up as soon as the ground was clear of frost and snow. But, unfortunately for this plan, a snow-storm came on that very night, and the next morning, on looking out at the window, John exclaimed, —

“Oh, Benny! Our martin-pole is all buried up in the snow.”

“Can't we dig it out?” asked Benny.

“No,” said John. “There will be more storms coming pretty soon, on the top of this, and we shall have to let it lie there buried up until spring.

“But it is lucky for us,” continued John, “that we got the pole yesterday, — for after this the snow will be so deep in the woods that we could not get one at all.”

As soon as the snow melted away in the spring, and before John had served his apprenticeships at sawing and planing, he asked Ebenezer about his making a house to put upon his pole.

"Do you think I can make one?" asked John.

It was about the middle of April when John asked Ebenezer this question.

"No," said Ebenezer, "not in time to let the rooms to any birds this season. The martins will be here now in a few weeks, and you have got a great deal to learn before you can make a good martin-house."

"I don't suppose it need be very good," said John. "The martins don't care."

"No," replied Ebenezer, "the martins don't care, but the *people* do, that will see your martin-house from the yard. You could perhaps knock together some rough and ill-looking box, that the martins might possibly occupy, — but it would be a deformity to your mother's yard, and a disgrace to your workmanship; and after it is once put up, you can't get it down again easily, to put a better one in its place.

"So I advise you," continued Ebenezer, "to take time, and go slowly, and give up the attempt to get your martin-house up this spring; but make as good an one as you can, without paying any attention to the time of getting it done, and when it is done, without any hurrying, then put it up.

- That will make it too late for the martins to build nests in it this spring, but you will perhaps see them coming to look at it, and flying about it during the summer, and next spring they will come and build nests."

There is no doubt that this was most excellent advice, though it cost John a good deal of effort to make up his mind to be governed by it. But he did so make up his mind, after some hesitation and delay, and then, turning round to Benny, who was standing near, listening to the conversation, he said, —

" Well, Benny, there is one thing that we can do now, at any rate. We can strip the bark off the pole."

It was very early in the spring when this conversation took place, John having been reminded of his martin-house plan by seeing the pole gradually coming into view from beneath the melting snow. That same day John and Benny hauled out two pretty big logs on a sled to the place, and then raised the pole up out of the snow, putting one end upon each log. While it was in this position they succeeded, without much difficulty, in peeling off all the

bark, in long strips, and then left the pole where it was for a time, in order that the surface of the wood, left bare by the peeling off of the bark, might have time to dry.

"Now, Benny," said John, "we will pile up all these strips of bark, and make a bon-fire of them."

"I don't believe they will burn very well," said Benny.

Benny thought that the strips looked too green and wet to burn very well. Still, at John's request, he went to the house for some coals of fire, which he brought out in the fire-pan; and then, after piling up the strips of bark, the boys put the coals upon the top of the heap, and they soon had a blazing fire. The bark burned much better than either of the boys expected.

The reason was that the tree was an evergreen, and almost all evergreen trees produce certain resinous juices with their sap, which fill the little channels between the wood and the bark, and penetrate into the substance of the bark, and even into the leaves. These resinous juices make the bark and the leaves quite inflammable, even before they are dry.

CHAPTER XVII.

PLANS FOR THE MARTIN-HOUSE.

THE next time that John saw Ebenezer he told him that he had stripped his martin-pole, and had left it to dry.

"Did you block it up while you were stripping it?" asked Ebenezer.

"Yes," replied John. "I put two logs under, one at each end."

"And have you left it so?" asked Ebenezer.

"Yes," replied John.

"That will not do," rejoined Ebenezer.

John asked why not, and Ebenezer told him that by being supported at the two ends only, the middle of the pole would sag, and if he left it to dry and season in that shape, it would "take a set," as he expressed it, and become permanently crooked.

"The best thing for you to do," added Ebenezer, "is to move it round behind the

shed, to a place where it will be out of the way, and in the shade, and then block it up there carefully, putting blocks under at different places all along, so as to make it lie perfectly straight. If it dries straight, it will be straight forever afterwards. If it dries crooked, it will stay crooked."

"But I have not got any blocks," said John.

"Oh, sticks of wood will do," said Ebenezer. "We call sticks of wood blocks, or anything else that we put under a stick of timber or a stone, to keep it off the ground. It need not be very high, just high enough to be above the dampness of the ground."

"But then," said John, "I must not put it in the shade; I must put it in the sun, to make it dry faster."

"The sun will dry it *too* fast," said Ebenezer, "and so make it crack. It is better to put it in the shade, and let it dry slowly."

John determined at once to obey these directions. He and Benny, as soon as the outside of the pole was dry, contrived to mount it upon the sleds, for there was still a good deal of snow upon the ground at this time, and to draw it round to a shady

place on the north side of the shed, where they blocked it up carefully in the manner that Ebenezer had directed, and left it there to *season* — that is, to dry in the inside.

For you must know that a tree, while it is growing, is full of sap and other juices which fill the millions of little pores and channels which run through the substance of all wood from the bottom of the tree to the top, and out to the farthest ends of all the branches.

While these juices remain in the pores of the wood, people call the wood green, and when they are all dried out, the wood is said to be seasoned. It takes a great while for wood to become thoroughly seasoned, especially when the tree, or the piece cut from it, is large.

John let the pole lie where he had thus placed it, for some weeks, and at length one day, just after he had received his instructions from Ebenezer in planing, as related in a preceding chapter, he took it into his head to plane the pole smooth, and then to paint it.

He succeeded in doing this very well.

He first raised it up pretty high, and supported it by means of two boxes that he put under the two ends. In this position he could work at it much more conveniently with his plane. He did not plane over the whole surface of the pole, for in most places it was smooth enough already. He only planed the places where branches had been cut off, and which had been left rough by the saw, and some other parts, here and there, which seemed to need smoothing down.

His next plan was to paint the pole, and as this was before he had any supply of paint of his own, he went in to ask his mother's permission to go into the town and buy some.

His mother hesitated, and seemed to be in doubt how she should answer the question.

"I can paint, mother," said John.

"Yes," replied his mother. "I have no doubt that you can paint. What I am afraid of is that you will paint too much. I am afraid you will not be satisfied with painting the pole, but will paint your clothes too."

"Ah, mother!" said John, "I will be very careful indeed."

"I have no doubt you will be careful," said Mrs. Gay, "but it will be safer for you to put on some old clothes. If you are willing to take the trouble to go up into the garret and put on an entire suit of old clothes, and leave those that you have on, there, until you have finished the work and carried the paint-pot and brush home, you may do it."

John thought that these were rather hard conditions, and for a moment he was almost inclined to give up the plan of painting his pole, it would be so much trouble, he thought, to go and change all his clothes twice. He knew very well that it would be of no use to ask his mother to alter her decision, for it was her invariable practice never to give but one answer to one request.

If I were writing this book for mothers instead of children, I should advise them to adopt the same rule, and always to adhere to it. Mothers very often complain that their children worry and torment them by their teasing, but that is because they

allow themselves to be persuaded to change their answers, when they have once been given. It is the same too with older brothers and sisters who have little children put under their charge. You must understand that if they tease you to change an answer once given, it is all your own fault. They tease you because they find by experience that by teasing you they in the end generally gain their point.

The remedy is to make it a rule, after once giving an answer to a request, never to change it,—unless indeed the circumstances change, or you learn some new facts which alter the case essentially. Take as much time as you choose in considering what your answer shall be, and if the children have anything to say, hear it first and consider it well, before you give it; but after it is once given never change it, and the children will soon find out that it does no good to tease you.

John went up and changed his clothes, and found that, after all, it was not much trouble. Then he and Benny went into the town and bought some paint, borrowing at the same time a pot to bring it home in, and a brush to put it on with.

There was some question about the color which it was best to use. Benny was in favor of red, with a green band around the top. But John finally decided in favor of a sort of lead-color.

"You see, Benny," said he, "lead-color will last and look nice a great deal longer than any such bright colors as red and green. They would look very pretty as long as they kept bright, but as soon as they began to grow dull and faded, they would not look well at all."

"But then you would only have to paint the pole over again," said Benny, "and that would make it as pretty as it was at first."

"No," said John, "we can't paint the pole after it is put up. There is no way of getting up to it any higher than we can reach."

"Not with a ladder?" asked Benny.

"No," replied John. "There is nothing for the top of the ladder to rest against except the pole, and it would not be steady upon that. It would turn, and down it would come, paint-pots, painter, and all."

Benny paused a moment in silence, while

his imagination was picturing the scene which such a catastrophe as this would present to view,—the painter half killed perhaps by the fall, the pots and brushes scattered about, and the red and green paint running all over the ground. At length he asked whether it would not do to rest the top of the ladder against the martin-house. But John said he was afraid it would not be strong enough; and in the end they both concluded that it would be decidedly best to paint the pole in some plain and substantial color, which, once put on, would remain in good condition for as long a time as possible.

So lead-color was finally fixed upon, and, as has already been said, they bought the paint, borrowing at the same time a pot and a brush, and then came home and painted the pole, all but about three feet at the big end, which was the part that was to go down into the ground.

The pole looked very nice indeed when it was thus painted.

“And now,” said John, “just as soon as I learn how to saw and to plane, I mean to begin my martin-house.”

For it must be remembered that all this about the pole took place quite early in the spring, before John had served his apprenticeships, or before he had any shop.

It was very well however, on the whole, that a considerable time should elapse between the painting of the pole and the putting of it up, as this gave the paint time to become tolerably hard, by which means the danger of injuring it, in the rough handling which such a pole must necessarily encounter in being raised, was much diminished. Paint dries so far as to bear being touched with the fingers, in a very few days ; but it remains quite tender for a long time, and while in this condition is very easily rubbed off or defaced.

CHAPTER XVIII.

ARRANGEMENTS FOR A MODEL.

MARTINS are what they call birds of passage, which means that they pass to and fro to different portions of the earth, at different seasons of the year. They live chiefly upon insects, and when the cold weather comes in the fall, and there are no longer any insects flying about in the air, they all go away to some warmer country, far to the southward, where they can find plenty to eat till the spring returns. Then they come to the northward again to the same places where they were before.

Whether the same martins come back to the same martin-houses again, is a question that is very difficult to decide, since the different birds all look so much alike. But the people who have martin-houses, and who take an interest in watching the birds, all think they do.

The pole which John had painted lay a

long time in the shady place behind the shed, where he had placed it to dry — until in fact he had almost forgotten it. This was, however, a very good thing, as I have already said, for it gave the paint time to harden.

At length, early in April, the martins came, and John was reminded of his pole by hearing them in the air and seeing them as they gathered, with a great deal of chirping and chattering, around certain martin-houses in the town, which he could see from his mother's grounds. He had not, however, at that time made progress enough in learning the use of tools to undertake so difficult a thing as making a house for them, — and so the martin-pole lay, neglected as it were, five or six weeks longer, until in fact after the middle of May.

Then, one day, when he and his uncle Edward were walking about, they came to the place where the martin-pole was lying.

"Here's my martin-pole, uncle Edward," said he. "It is time for me to make my martin-house. Don't you think I could make one now? I am getting to be a pretty good carpenter."

"You can use the tools well enough," said Edward, "to do the work. If you fail, it will be for want of common sense in planning it. Boys like you have so little sense."

Here John began banging his uncle on his back, with his open hand, to punish him for uttering such a slander on boys.

Edward took no notice of his punishment, but walked straight along.

"I suppose," continued Edward, "that, if you were to undertake to make a martin-house, you would not think of anything less than a Chinese pagoda, eight stories high, with a row of little bells pendant around each story,—or a church, with a dome and cupola above it in the centre, and two steeples at the corners at one end."

"No indeed," said John. "I should not try to make any such a thing."

"Or perhaps a model of the British Houses of Parliament," continued Edward, "with all the turrets and pinnacles and balconies and everything."

"No indeed," replied John. "I should not try to do any such a thing."

"What kind of building then should you try to make?" asked Edward.

"I don't know," answered John. "What would you do, if you were me?"

"I should look about the country here," said Edward, "and choose some small house, — the smallest that I could find, — and then make my martin-house like that."

"Rose's house is the smallest house that I know, anywhere about here," replied John.

"Very well," said Edward. "You could not have a better house than Rose's. It is just the thing for a model for you. Besides, you know Rose so well that you can go there and measure as much as you please. She will not have any objection. Indeed she will be rather pleased to have you measure her house and make a model of it, for a martin-house."

"Shall I have to measure it?" asked John.

"It would be better to measure it," said Edward, "so as to be sure to get the right proportions. You *know* that Rose's house is well proportioned, and looks well; and so, if you follow the model of it exactly,

your martin-house will look well proportioned too. But if you go by guess in determining upon your dimensions, you will be very likely to get them wrong, and then when the house is finished and put up on the pole, it will look out of shape."

"Then I'll go and measure it exactly," said John.

"You might make it on a scale of an inch to a foot," suggested Edward.

"How is that?" asked John.

"Why, you measure the length and breadth and height of the house in feet," replied Edward, "and so also the places of the doors and windows, and the sizes of them. Then, for every foot in the real house you allow an inch in your martin-house; and for every half a foot half an inch, and so on."

"Yes," said John, "I'll do it so."

"The way to do the measuring is this," continued Edward. "You must take a piece of paper, or a smooth board, — a smooth board is the best, because it won't be blown about by the wind, — and draw the shape of the front of the house upon it, and the places of the door and windows,

as near as you can by your eye. Then measure all the various dimensions and distances, and mark them down on your plan, each one where it belongs. Then you carry your board home, and mark out the board that is to make the front of your martin-house, by those measurements, allowing an inch for a foot. You do the back side of the house in the same way, and the ends, and the shed part, and the little pig-pen. Shall you put the pig-pen in, do you think?"

"Would you?" asked John.

"Yes," replied Edward. "I think I should if I were you. It will make it look more like Rose's house, and, besides, the pig-pen will make a place for one more pair of martins."

"Then I think I will," said John.

"It will make you some more work," said Edward.

"Never mind that," replied John.

"But, uncle Edward," continued John, after a moment's pause, "I don't see how I can measure how *high* the house is. I can't reach up so high."

"Ah," said Edward, "there's a diffi-

culty. It will require some ingenuity for you to contrive a way to do that. I shall not tell you of any way. You must find out for yourself."

"But suppose I cannot find out any way?" said John.

"Then you must *estimate* the height," replied Edward. "You must stand back a little way and make an estimate in your own mind, how high it is. Or you must see what clapboard on the side of the house is about half-way between the roof and the ground. Then you can measure up from the ground to the clapboard, and take double that distance for the height of the house."

"Oh, yes!" rejoined John. "I can do it in that way, I am sure."

"But, uncle Edward," said John again, after a short pause, "I am afraid Rose's house won't be big enough. It won't hold enough martins. There are only two rooms in it."

"There are only two rooms in the main house," replied Edward, "but then there is a kitchen in the addition, and a shed, besides the pig-pen. That will make five

rooms for the martins, and five rooms will hold ten martins. Then I should think you could have two rooms in the garret. That will make room for fourteen martins. Then if, in the course of the summer, each pair have only two young ones, that will make twenty-eight martins that you will have about your martin-house in the fall of the year. That will do very well."

"Yes," replied John, "that will do very well indeed."

While John and his uncle Edward had been holding this conversation, they had been walking along toward the house, and finally had taken their seats upon a settee, which stood upon a back piazza.

"Where are you going to put up your martin-pole?" asked Edward.

"Out there," replied John, pointing to the place that he had chosen, "right in the middle between those three little trees. That is, I mean to put it there if mother is willing. Do you think she will be willing?"

"That will depend upon how good a martin-house you make," replied Edward. "That is a very conspicuous place, and if

I were she, I should not be willing to have any martin-house there unless it was a very pretty one."

"I mean to make my martin-house as pretty as I possibly can," replied John.

"If that is your plan," said Edward, "I advise you to go on very slowly with your work, and do not set any time at all for getting it done. When you go to work upon it any day, don't try to see how much you can get done that day, but only how perfect you can make the workmanship of what you do. There will be a great deal of work in it, and it will take you a long time to complete it, if you do the work well."

"And if I get into difficulty in it, will you help me, uncle Edward?" asked John.

"Oh yes," replied Edward. "I will help you, whenever you wish for any help; that is, I will advise you and show you; but I hope you will be able to do all the work yourself."

CHAPTER XIX.

TAKING MEASUREMENTS.

A FEW days after this, John went with Benny and his cousin Mary to take the measure of Rose's house. He took Benny in order that he might help him about the measuring, and Mary, happening to hear of their going, wished to go too.

Rose, as I believe the reader is aware, was a colored woman who lived alone in a small but very neat and pretty house, and who was always very kind to all the children who came to see her. This was one reason why Mary, when she heard that the house which John was going to measure was Rose's, wished to go too.

As soon as they came near the house they saw Rose looking out at the window. She had heard their voices, and so she came to the window to see.

"Rose," said John, "we are coming to measure your house. May we do it?"

"Yes," replied Rose, "you may do anything to my house you please except to stay away from it. But what are you going to measure it for?"

"Why, you see, I am going to make a martin-house," replied John, "and uncle Edward says that the prettiest way for me to make it is, to copy your house just as it is."

Rose seemed very much pleased to find that her house was considered a model of beauty, especially by a gentleman of such good taste as Mr. Edward. It was however really quite a pretty house, and was kept moreover in so neat and tidy a condition, that almost every one stopped to look at it in passing by.

The house itself, as has already been said, had only two rooms, one on each side of the door. There was however an addition, or wing, built on, in which there was a small kitchen and a wood-shed. This wing fronted the same way as the house, but it was set back a little from the main building, so that the yard in front of the kitchen and shed was a little wider than it was in front of the house.

Beyond the shed and across the end of it, was Rose's pig-pen. There was a place to feed the pig in the end of the shed where there was a hole cut through. By this arrangement Rose could feed her pig every day, without ever having to go out in the rain.

Over the front corner of the shed that was farthest from the house, where the shed joined to the pig-pen, there was a tall pole, with a vane upon it shaped like a horse. This was to show which way the wind was blowing. Rose could see this vane from the window of her sitting-room — the window where her ironing-table was. It was curious that the children, when they went to see Rose, almost always found her ironing.

After talking a few minutes with John and the children, Rose said she would go in to her work, and leave them to do their measuring.

"Only," said she, "if you want me to help you about anything, you must come and call me."

"Yes," said John, "we will."

"And when you have finished your

measuring, come into the house," continued Rose. "I want to see you before you go home."

"Yes," said Mary and Benny with one voice, "we will."

They thought at once that what Rose wished to see them for, was probably to give them something good to eat.

John had brought with him a two-foot rule to measure with, and also a smooth board and a long string. He now proceeded at once to make a drawing on his board of the front of the buildings, with all the doors and windows, making his drawing as correct as he could by the eye. Then he began his measuring. As fast as he made his measurements, he marked the results in the proper places in his drawing.

He succeeded, too, in contriving a very good way to measure the height of the house. He found a pretty long pole, with a fork at the upper end of it, one which Rose used to keep up the middle of her clothes-line when it was loaded with clothes. He made a loop in one end of his long twine, and then, after hooking this loop over one of the branches of the fork,

he found no difficulty in reaching up with it to the eaves of the house. While he held one end of the twine up to the eaves in this way, Mary, after taking care to see that it was hanging straight, took hold of the twine at the place where it reached the ground. Then John took the twine down and measured the length of it to where Mary had taken hold. Of course this gave him the height of the house, from the ground up to the eaves.

This did very well for the front, but at the end the house was higher; for here the roof, sloping upwards on each side from the eaves, formed a peak at the ridge-pole in the centre. To get the height of this peak, John was obliged to go up into Rose's garret, by means of a steep step-ladder in the back entry, and reach his forked pole, with the twine looped to the upper end of it, out the garret-window.

In due time, when John had finished his measurements and had marked the results all properly on his plan, he laid down the plan, with the measuring-rule and the twine upon the top of it, carefully upon the step of the door, and all the children went into the house, according to Rose's request.

Here they found Rose busy at her ironing-table as usual, at one window, but at another window there was a small table set, with three saucers of maple-syrup upon it, and a plate containing six moderate-sized slices of bread and butter, — two apiece for each of the children, — all nicely spread.

“ There, children,” said she, “ sit down there and eat a little luncheon. There’s some bread and butter, and a little maple-syrup for you to put on it. The first one that gets the least drop of syrup upon their clothes, will have to stand out in the middle of the floor on one foot and count five.”

The children remained at the table half an hour or more, eating their luncheon. Lucy, as it happened, finished hers first, and then she went and stood at the table where Rose was ironing.

“ Rose,” said she, “ what makes you always ironing when we come to your house to see you ? ”

“ Because I always get through all my washing very early in the morning,” replied Rose, “ long before you ever come.”

“ Rose,” said Mary again after a little pause, during which she had been looking

out at the window, "does *that* vane do you any good?"

"Yes," said Rose. "I can tell which way the wind blows by it."

"And does *that* do you any good?" asked Mary,—"to know which way the wind blows?"

"Yes," replied Rose; "sometimes I can tell by it what kind of weather it will be for drying my clothes."

Soon after this, John and Benny had finished their luncheon too, and then bidding Rose good-bye, they all went home.

CHAPTER XX.

ROSE-COLOR.

As the children were walking along toward home, after John had made his measurements, Mary asked John if he was going to have a vane on his martin-house, like Rose's vane.

"Hoh!" exclaimed Benny, "martins don't need any vane."

"Yes," rejoined Mary. "They need to know how the weather is going to be when they are going to set out on their journeys."

"At any rate," said John, "it would make the martin-house look more like Rose's house if I had a vane. But I could not get any little horse like that. And if I could, I don't see how I could fasten it up in any way — so as to make it turn."

"I have got a little horse," said Mary.

"How big?" asked John.

"So big," replied Mary, holding out her two forefingers about three inches apart.

"It came in a box of toys I had. Luly has lost all the other toys, and now there's nothing left but this horse."

"I wish you would give it to me," said John, "and I will give you something instead."

"What will you give me instead?" asked Mary.

"I'll give you a ribbon," said John, — happening to think that moment of a piece of ribbon that he had.

"How long is it?" asked Mary.

John held his hands out to show how long it was. The length which he indicated in this way was about half a yard.

Mary looked at his hands attentively for a moment, considering whether that would be a sufficient length to go round one of her bonnets. She concluded that it would.

"What color is it?" she asked.

"Rose-color," said John. John looked aside toward Mary with a somewhat mysterious expression upon his countenance, as he said this, but Mary did not observe him, and so she said, —

"Well, I'll give you the horse for the ribbon. You shall give me the ribbon as

soon as we get to your house, and I will bring you the horse the next time I come."

As the party drew near the house, they saw Edward sitting upon the piazza, reading. They all went first to show him John's plan and measurements. Edward examined the board very attentively for some minutes, and finally said it was all right, and that with patience and perseverance he thought John could make a martin-house from that plan very well.

John went to put the board and the other things away in his shop, and then went into the house to get the ribbon. He soon brought it out; but poor Mary was bitterly disappointed when she came to see it, for instead of being, as she had imagined, a pretty pink ribbon wide enough as well as long enough for a bonnet, it was only about half an inch wide, and was black.

"Oh, John!" said she, "this is not the kind of ribbon you said, at all!"

"Yes," said John. "Is n't it as long as I said?"

"But you said rose-colored," replied Mary, "and this is black."

"Well," said John, "Rose is black, and so this ribbon is Rose-colored."

"Oh, John!" said Mary, "that is not what I meant, at all!"

"But that is what *I* meant," replied John.

After some further conversation on the subject, John offered to leave the question to his uncle Edward, and Mary readily acceded to the proposal. So they went together to the piazza where they had left Mr. Edward, and then proceeded to state the case to him. Benny stood by, listening.

"I told her a Rose-colored ribbon," said John, "and it *is* Rose-colored. I did not say what kind of a rose. Some roses are white, some are light pink, and some are crimson. And there is one Rose at least that is black. If I said a rose-color, I have a right to have any kind of rose I please."

This was a manly sort of reasoning, it must be confessed, being very lucid and logical in form. Mary's argument on the other hand was of a different character, being more like the reasoning of a woman.

She said that she thought she was going to have a pretty red ribbon for her bonnet; that she did not care anything about a black ribbon like that. Besides, it was too narrow.

"No matter," said John. "She made the bargain."

After hearing all that both the children had to say, Edward paused to consider the subject a moment, and then he gave his decision as follows.

"Yes, Mary," said he, "as John says, it was a bargain; and as he has given you the Rose-colored ribbon, you ought to give him the horse. You stay with me and let the boys go away, and I will explain it to you."

So saying, he took Mary by the hand and drew her toward him, and sent the boys away.

As soon as they had gone, Edward said, —

"You must give him *the horse*, Mary, just in the same way that he gave you a rose-colored ribbon, that is, by a play upon words."

So saying, Edward took a small piece of paper out of his pocket, and wrote upon it the words *The Horse*. Then he folded up the paper and gave it to Mary.

"There," said he, "carry that to John and ask him to see what it is that is written

there. He will say 'The Horse.' Then you must say, 'Very well, I give it to you. *That* is what I agreed to give you, — the horse.' If he makes any objection, tell him that I think that is *the horse*, just as truly as the ribbon he gave you is a rose-colored ribbon."

Mary ran off in great spirits to find John, and delivered her message as Edward had directed her. John looked for a moment quite confounded, but he was a boy of altogether too much good sense to make any objection. So he laughed loud and long, and then called Benny to see *The Horse* that Mary had given him.

"I think it is about fair," said he, turning to Mary, "for it was a kind of trick that I played upon you, after all; and you have paid me off with another trick."

Mary stood still a few minutes with a smile of satisfaction upon her face, as if she was enjoying her triumph, and then said, —

"After all, John, I don't care much about the ribbon, and you may have the horse for nothing, if you would like him for your vane."

John was quite struck with Mary's generosity in making him this offer, and he began to feel rather ashamed of having attempted to procure the horse by chicanery, though, to do him justice, it must be confessed that calling his black ribbon Rose-colored was an idea that occurred to him at the moment, and he intended it rather as a joke than anything else. The victory, however, which Mary gained over him by her generosity was complete, much greater in fact than her first triumph in paying him in his own way.

John soon after this began his work upon the martin-house. The first thing was to measure and mark, and then to saw out the boards that were to make the several buildings. He was surprised to find how many of these boards were required — there being no fewer than fifteen in all. There were six boards required for the main house, two for the sides, two for the ends, and two for the roof. For the addition only five were necessary, as the roof sloped all one way, and for the pig-pen only four, for one side of the pig-pen was formed of the side of the shed.

John sawed out all these boards first, and cut out the doors and windows, and then planed them. This alone was a great deal of work, and it took him many days to do it all. But he took a great deal of pains, and made every board as correct in form, and as perfect in finish, as possible. He accomplished this part of the undertaking during the spring, but he did not get his martin-house finished and ready to put up till long after the middle of the summer.

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